

AMERICAN RAILROAD JOURNAL, AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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D. K. MINOR, Editor.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, JANUARY 9, 1836.

The Title page and Index will be forwarded with the next number.

Subscribers to the Journal who desire to obtain missing numbers, will please let us know as early as possible, that we may supply such as we may be able, from the few saved from the fire. A statement of the missing numbers should accompany the subscription for the fifth volume, in advance.

In commencing a new volume of the Journal, we do not deem it necessary, after what has been said in the last three numbers issued since the conflagration, to make any apology for its delay. We feel sensibly, and regret deeply, the cause, and look confidently to our patrons for forbearance, on account of its delay; while we, at the same time, upon our assurance that the Journal will be continued, in an improved style, and, we trust, with increased usefulness—and with equal confidence, look to them for prompt remittances for the current year, but more especially for balances due. They need not, we are sure, be again reminded of the losses we have sustained, and the difficulties under which we labor,

in consequence of them, to insure a ready compliance, not only with the previous, but also with the following request, viz. that each friend of the Journal will, as far as it is in his power, exert himself to extend its circulation. And in doing so, they may rest assured that its publisher will not be the only one benefitted.

If a few friends interested in Railroads would do as the writer of the following letter, with whom we are not even personally acquainted, the Journal would soon present a far more attractive appearance. He will please accept our grateful thanks for his very important aid in sustaining the work.

"New-Orleans, Jan. 7, 1836.

"To the Editor of the Railroad Journal:

"Sir,—I transmitted to you, a few weeks since, fifteen dollars for my own, and the subscription of others to the Railroad Journal for the ensuing year. On my way to this city, I obtained you ten subscribers, whose names are annexed—and inclosed I send you twenty-five dollars."

Thus we have received from one friend of the Journal, since the fire, fourteen new subscribers and \$40. The Journal has many such friends, we trust.

TO RAILROAD CONTRACTORS.

SEALED PROPOSALS will be received at the Railroad Office or the Post Office in the Village of LOWER LOCKPORT, until the 18th day of February next, for laying the Superstructure of the LOCKPORT AND NIAGARA FALLS RAILROAD. All necessary plans and specifications will be exhibited by the Engineer of the line, at the Railroad Office, on the last day of receiving propositions. I would also call attention to the advertisement of the Buffalo and Niagara Falls Railroad Company, for receiving similar Proposals until the 16th of February, 1836.

A. TORRANCE, Commissioner.
Lockport, Jan. 13, 1836. 1-3

CANAL NAVIGATION IN WINTER.—The following notice from the Baltimore Gazette of the 20th inst., states a fact which

must be of interest to the friends of Internal Improvement everywhere. It affords us real pleasure to learn that any part of the country is in the enjoyment of such advantages—as it must, we think, induce others to use greater exertion to secure similar facilities, or their equivalent, in Railroads.

The information contained in the following paragraph is of deep importance to our city, and ought to be known, as it may stimulate the exertions of such, if any, of our citizens who may have had doubts on the subject—they will be convinced by this proof, that the benefit of the western trade to Baltimore is not merely in danger—to an alarming extent, as they will see, it is lost.

CHESAPEAKE AND OHIO CANAL.—The Williamsport Banner of Saturday, states that the Canal has been open and in active use for the last week, and that a great amount of business has been done upon it. Quantities of flour and other produce were daily arriving at that place to be forwarded on it to market.

A list of the boats and cargoes that cleared from Williamsport to Georgetown, for the week ending on Friday last—makes 3364 barrels flour, 315 barrels whiskey—45 barrels cloverseed, besides other articles of produce.

We find the following notice of the wonderful increase of travel to and from this city, in the Newark, N. J., Sentinel, of the 19th inst.

NEW-JERSEY RAILROAD.—In December, 1834, there were 6927 passengers carried on this Road, between Newark and New-York, while in December, 1835, (last month) the number was 16,081, exclusive of Elizabethtown and Rahway passengers. The accession from these towns is already considerable, and is increasing. We are told also, that notwithstanding the reduction of tolls on the old Post Road and Bridges, that the ordinary revenue has been fully sustained; a practical proof that the former policy of high rates was in no respect advantageous to the stockholders. In view of facts like these, who need be surprised at the great prosperity and growth of Newark?

INTERNAL IMPROVEMENT STATE CONVENTION.—This Convention met at the Assembly Chamber yesterday. Joshua A. Spencer, Esq., of Utica, called to order, and moved the appointment of Samuel Cheever, Esq., of Albany, as a temporary chairman. A. J. Parker, Esq., of Delhi, and C. P. Kirkland, of Utica, were appointed Secretaries.

Mr. J. A. Spencer suggested, that as the heavy snow storm had prevented a number of Delegates from reaching the city, an adjournment till to-day.

A. Stewart, Esq., spoke at length in explaining the objects and importance of the Convention.

On motion of Mr. A. L. Jordan, Esq., the following gentlemen were appointed a Committee to report the names of suitable officers for the Convention:—Messrs. J. A. Spencer, A. L. Jordan, R. P. Hart, T. W. Oleott, L. Bradish, J. E. Bloomfield, and A. J. Parker.

And then the Convention adjourned till 3 o'clock this afternoon.

TUESDAY, JAN. 12,—4 o'clock.

The Convention met pursuant to adjournment, in the Assembly Chamber.

Mr. Joshua A. Spencer, from the Committee appointed yesterday to select officers for the Convention, reported the names of the following gentlemen, which report was unanimously agreed to:—

Hon. SAMUEL CHEEVER, President.

Sumner Ely, } Vice Presidents.

Charles Borland, }

David C. Colden, } Secretaries.

Fletcher M. Haight, }

The Roll of the members was called and perfected.

Among others Hon. Mr. Macon of the Senate was invited to take a seat in the Convention. He remarked that the despatch with which the business was disposed of in this Convention was commendable. It savors a little of Jacksonism, although he saw a great many good men in attendance, who belonged to the other party. He was aware that the delegation from Dutchess county were authorized to fill vacancies, yet he would beg leave to decline the honor now off red him of a seat.

Mr. Loockwood, of the Assembly, upon a similar invitation, declined serving in the Convention, for the reason that he had had no instructions from his constituents to serve.

The minutes of the Convention held in Utica in November last, were then read.

When an interesting report from the Committee denominated "the Committee on Roads and Bridges," was read by the Secretary; Mr. Blunt, of New-York, the Chairman of that Committee, being unavoidably detained from the Convention.

We gather the following statistics from the report:—

Number of miles of common roads in the State, 71,204.

Number of days works assessed for the repair of these roads 1,378,743.

Number of miles of turnpike roads in the State 4124, supported at an annual cost of \$112,940.

Number of bridges in the State 1031, supported at an annual expense of \$21,210.

The annual amount expended in the repair of common roads is about \$1,110,605.

The report upon Mr. Jordan's motion, was laid upon the table for the present.

Mr. Gordon then moved that a Committee be appointed to report subjects for the consideration of the Convention, which motion was agreed to.

Mr. Alvin Stewart moved a re-considera-

tion of the vote by which the report was laid on the table, for the purpose of moving its acceptance.

Mr. Jordan remarked that he made the motion which he had, because the Chairman of the Committee who had made that report had informed that it was incomplete, and he was desirous to have it returned to him to complete.

Mr. Stewart supposed the Chairman could make any additional statistics in a supplementary report; but expressed his willingness to withdraw his motion of re-consideration if it was desired by any member to examine the report.

Mr. Spencer hoped the motion would be withdrawn for the present. The adoption of this report was not very important, excellent and able though it be. The first and most prominent business to be considered was the expediency of forming a State Society.

So the report was permitted to lay upon the table.

The Chair here named the following gentlemen to compose the Committee to report the business proper for the consideration of the Convention:—

Alvin Stewart, of Oneida; J. A. Spencer, of Oneida; Luther Bradish, of Franklin; Joseph E. Bloomfield, of New-York; O. Titus, of Dutchess; A. L. Jordan, of Columbia; Gen. Welsh, of Chenango; Jesse Buel of Albany; Benjamin Walworth, of Chautauque; T. A. Leland, Steuben.

Mr. J. A. Spencer moved the adoption of the following resolution, passed at the Convention in Utica:—

Resolved, That it is recommended to form a State Society for the promotion of Internal Improvements, and that this Convention, at its adjourned meeting, adopt measures to organize the same.

Mr. S. said he was desirous to have this resolution acted upon now, for the purpose of having it referred to the Committee of ten.

Mr. Hart thought the question on this resolution better be deferred until the report of the Committee of ten was made.

Mr. Spencer deprecated any delay of this resolution. He was desirous to have the great question settled at once—Shall we form a State Society or not? Upon this question he wished the expression of the Convention. If it was decided that a State Society should not be formed, he believed the briefer the session and the fewer the plans proposed the better.

Mr. Jordan thought it would be disrespectful to the former Convention, not to consider this question. It was there resolved to be expedient to form a State Society. They did not submit a plan. This they left for the present Convention to do; and he was desirous to obtain the sense of the Convention to-night upon this question.

Mr. Hart, of Troy, said he was not prepared to act; and he believed many others present were in a like situation.

Mr. Conklin, of Oneida, expressed the same views. He deemed the discussion of this resolution now, premature. He would therefore move to lay the resolution on the table.

Mr. Spencer regretted there appeared to be so much want of information on this first great step. He had hoped that members would have come here prepared to act upon this incipient question, at least, promptly. It was not proposed to adopt a Constitution, or say what the Society shall do after it was formed, but merely to say—shall we form such a Society? He wished

the Convention to say whether we should do anything or nothing on this great subject of Internal Improvement? If nothing, then no Society need be formed, and we might as well adjourn. But he hoped better things.

Mr. Carroll, of Livingston county, hoped that the resolution would be sanctioned. He was prepared to act now, and he trusted the majority of the Convention were.

Mr. Hart could not see why the gentleman from Oneida was so pertinacious in pressing this question to-night. If the question of forming a Society be the great question to be decided by this Convention, he supposed that it might be permitted to lay over until to-morrow.

Mr. Stetson offered a substitute to the resolution offered by Mr. Spencer, a resolution directing the Committee to inquire into the expediency of forming such a Society.

Mr. S. said he was of the number who wished a little time for reflection on this important question. He would not say but that he would be in favor of the formation of a State Society, and for its organization by this Convention, ultimately; but at present he would prefer a report from the Committee of Ten as to the expediency of the formation of such a Society. He did not wish to act too hastily, or to precipitate conclusions.

Mr. Dean, of Oneida, was opposed to the substitute, and in favor of the original resolution. He believed that a large majority of the Convention were in favor of the formation of a State Society, and of immediate action. He was sorry to see a disposition to delay this important question.

The question was then taken upon laying Mr. Spencer's resolution on the table; which was carried.

Mr. Stetson then withdrew his substitute—having offered it more for the purpose of postponing the final question until to-morrow, to give members time for reflection, than to create embarrassment, or an evasion of the question itself.

Mr. Gordon here moved an adjournment, but withdrew his motion at the request of a member.

The motion was renewed by Mr. Hart, of Troy, at the moment that

Mr. Bradish, (we believe) of Franklin, offered a resolution directing the Committee of Ten to inquire into the expediency of forming a State Society; and if they did deem such a measure expedient, to report a plan for its organization.

Mr. Hart refused to withdraw his motion to adjourn: when the question was taken and the Convention adjourned to 3 o'clock to-morrow afternoon.

WEDNESDAY, JAN. 13,—4 o'clock.

After the reading of the minutes of yesterday,

Mr. Stewart, from the Committee of Ten, remarked that the Convention was aware that Mr. Gordon, first named as Chairman of the Committee, was compelled to resign that station, his private business demanding his attention at home. This resignation had caused his (Mr. S.'s) appointment. It was unexpected on his part, and he deemed it due to himself and the Convention to say, that this was his apology for the imperfection and brevity of the report. He trusted, however, that the report would not embarrass or retard the proceedings of the Convention.

Mr. S. then read the following report:—We believe there is a general feeling in the public mind, that an enlarged system of

Internal Improvements, in the shape of Roads, Canals and Railroads, is the true policy for the State of New-York. By what means shall this belief and feeling be rendered the most available, to advance these great improvements? This is a question deserving our most serious consideration.

We believe that Nature has given to New-York a natural eminence in point of position and relation unsurpassed by any State or country on this continent. We believe her natural advantages—her natural capital—to be very great; but we also believe, that to that we may add almost as much more, by developing her entire capabilities by a grand and judicious system of Internal Improvements. If a kind Providence had done more for us than it has, room would not have been left for man to manifest his gratitude—discover his genius, and exhibit his patriotism.

We believe the more that public improvements are multiplied, the reason for complaints for taxation for their support will be diminished. For when the real estate of an individual is augmented in value, by a public improvement, or a new facility created to aid him in locomotion, or a new avenue opened for importing merchandise or exporting the produce of his soil, he must have a feeble idea of moral obligation, who would seek to evade the payment of his just part of such public work.

Taxation, toll, or impost, is the consideration money a people pay for a public blessing in the shape of an internal improvement. And we believe that the following is a fair rule by which to test the propriety of the State embarking in a public work:

Add the increased value of the lands and houses caused by the improvement running through the country where they are situated—add to this the time saved by man and beast—the reduced expense of the transit of merchandise or produce—add to this a reasonable sum for the agreeableness of manner of transacting business, by means of the improvement, as compared with old modes—then say if the interest on the capital sum these advantages are worth, exceed the interest on the capital required for the completion of the work;—then make it. It is, in the opinion of the Committee, demonstrated, if not mathematically, at least upon the principles of political economy, that the work should be prosecuted.

It is believed that were the present rates of toll preserved on the Erie Canal for 12 years to come, and the business transacted thereon was to increase in the same ratio it has for six years past, we should derive a revenue of three millions. Then say that half a million should be applied for repairs, improvements and use of Canal, we should still have left two and a half millions, or the annual interest, at 5 per cent. of 50 millions.

Your Committee have no question in asserting that whatever sum might be expended in the next twenty years, the State would reap a fourfold return. Every dollar expended in Internal Improvements, renders the State more desirable, more precious and more esteemed in the affections of its citizens, and draws forth their patriotic love. Every new mode of conveyance, by which time is saved, is a great object to the poor laboring man, for his time is his capital, and every hour lost in tardy locomotion, is a positive loss of his capital. A rich man thinks it hard to lose the interest of his money, but he is deeply affected at the loss of his capital; but the poor man who is travelling loses as much capital as he

wastes of hours and days by a poor and tardy conveyance.

The Railroad is the poor man's road. It is the rich man's money expended for the benefit of himself and poor man.

Were an exclusive system of Internal Improvements adopted, and brought to completion, the facilities of intercourse would be so augmented, perhaps it is not too much to assert, that it would render life itself more valuable, by diminishing the stock of human misery, and adding to the state of human happiness.

The State of New-York will become, under the fostering care of intelligence and liberality, the garden of the American continent—a land in which Art shall give Nature fair play. New-York, standing at the gate-way of the ocean, holds the key in her hand which unlocks the treasures of the Americas.

This system goes far towards equalizing advantages. It gives the parts of the State which are sequestered, advantages bearing some proportion to those parts of the land on which Nature has poured out her bounties.

Why is that man rich? Because he lives in the city of New-York. Why is that man poor, of equal capacity to make money? Because he lives on sequestered barrenness. This poor man, which we have supposed, is the victim of position. To reduce the amazing difference of position, between one citizen and another, not by pulling down the fortunate, but by raising him up who is not so, is the consequence of a liberal system of Internal Improvements. Again, the money expended in these improvements, will mostly remain in this State, among our own citizens. It is not as though we were importing these improvements from a foreign land, and sending our capital there to purchase them. No, we buy these improvements from our own citizens. We buy their labor, provisions and materials; our own citizens receive the consideration money for the construction of these public works. But without consuming more of your time in general remarks, the question is asked, by what means shall light be collected and imparted to the public mind; so that New-York need no longer hesitate to take the high station the God of nature intended her.

Your Committee believe a State Society consisting of gentlemen of intelligence, leisure and patriotism, who are willing to aid in developing and perfecting the resources of this State, who shall meet annually at your Capitol, and impart to the public the information acquired during the year by the members of the Society, will best promote the interest we have at heart. We take the liberty of submitting a draft of a Constitution.

Your Committee believe that a Society, of which the most ambitious literary man might be proud of a membership, is the best plan this Committee can recommend, to secure the great objects of this Convention; which is, to have a body of our most patriotic citizens constantly in the field of inquiry, and bringing forth from their treasures "things new and old," by which the public mind may at last see the path of internal improvements too plain to ever lose its way.

All of which is most respectfully, &c.

ALVIN STEWART, Ch'n.

Mr. Buel said he was decidedly in favor of the recommendation of the report of the formation of a State Society. Such a society would be highly valuable to the State at

large, in collecting statistical facts. The able report yesterday read to the Convention is conclusive evidence of what may be done in this department. In France there are Statistical Societies, and the important facts which they collect from the resources of the kingdom are found highly valuable, and prevent great labor to the Legislatures, and are of eminent service to the nation.—The proposition of forming a State Society met his views, and he was in favor of it.

Mr. Spencer remarked, that with a view to draw out the sense of the Convention, in relation to the formation of a State Society, he would move that the report, with the Constitution accompanying the same, be laid on the table for the present. He made this motion, for the purpose of calling up the resolution yesterday laid upon the table. He wished the question of forming a Society brought directly before the Convention, without being embarrassed by the Report or Constitution.

M. Stewart said he was sorry to differ with his friends from Oneida, but he thought it was not treating either the Committee or the Convention with due respect to pass by an original report to take up an old resolution, and thus crowd it in edge-ways.

Mr. Spencer regretted that his friend was so sensitive. He had made the motion, to have the question settled apart from the Report. Nothing could be farther from his mind than to treat disrespectfully either the Committee or the Convention.

Mr. Leland said, as the motion under consideration was to test the question, he would propose an amendment—to change the name of the Society to "the Statistical and Internal Improvement Society of the State of New-York." He thought the name would be more expressive of the objects of the Society.

At the suggestion of Mr. Jordan, Mr. Leland withdrew his motion for the present, and the original resolution—that a Society should be formed—was adopted unanimously.

The Constitution for the Government of the Society was then taken up, when

Mr. Leland proposed the alteration of the name as mentioned heretofore; but it was lost: when the Constitution was adopted.

The Constitution declares the object of the Society to be to develop the resources of the State, and to collect and impart information on all subjects connected with the advancement and prosperity of a general system of Internal Improvements.

The principle provisions of the Constitution are—

1st. The Society is to consist of one member from each county except New-York, which is to have four.

2d. The Society is to hold its meeting at the Capitol annually on the 2d Monday of January, and has power to confer honorary membership on eminent individuals out of the State.

Mr. Spencer moved that a Committee be appointed to nominate officers and members of the Society.

This resolution was adopted, as was also, the Report of the Committee of Ten, when the Convention adjourned, to meet tomorrow afternoon at 4 o'clock.

DETROIT AND ST. JOSEPH RAILROAD.—The Detroit Journal & Advertiser of January 2d says, and we certainly agree with them fully in the remark,

"Were our citizens to a man, fully impressed with the important results which will attend the construction of the Railroad from the St. Joseph to this city, we are

persuaded that the call by the Mayor for a full attendance at the adjourned meeting, at the City Hall this evening, would be responded to by an overflowing house. Those who have been in doubt as to its practicability, (if there are any such) should attend. We think such facts and data will then and there be presented, as will convince the most skeptical that the future commercial importance of Detroit, depends in a very great measure upon the vigor with which this work is prosecuted. Let no citizen suppose that he has no interest in it. Every merchant, mechanic, professional and laboring man, be he rich or poor, will participate to a greater or less extent in the general prosperity, which it will bring upon our youthful city. It has been truly remarked that in commencing this work we shall have to rely mainly upon our own resources; and as capital is limited here, the sum necessary to construct the work will have to be made up by an aggregate of small contributions. The shares amount to \$50 each, payable in such instalments as may be required as the work progresses. We believe that there is not a man in any kind of business in this city, who is not able to subscribe for one, two, three, or more shares. We say then, let every citizen attend the meeting to-night; let every fact which may bear upon the utility of this important work, be laid before the people—let vigorous and united exertions characterize the proceedings, which, with corresponding action in the county, will secure to us the construction of a noble work, which will be alike creditable to the enterprise of Michigan and important to her commercial interests."

MANHEIM AND SALISBURY RAILROAD COMPANY

At a meeting of citizens of the counties of Montgomery and Herkimer, friendly to the construction of the "Manheim and Salisbury Railroad," holden pursuant to public notice, at Russell's tavern in the town of Salisbury, on the 2d day of January, 1836, B. D. Winton, of Manheim, was appointed Chairman, and Henry Devereaux, of Nicholasville, was appointed Secretary.

A survey of the route, and an estimate of the expense of constructing the proposed Railroad having been made under the direction and superintendence of Mr. Robert Higham, one of the engineers of the Utica and Schenectady Railroad, and the maps, profiles and estimates, having been submitted to the examination of this meeting: Thereupon it was

Resolved, That the citizens here present highly approve of the same, and of the report made by Mr. Higham.

Resolved, That in the opinion of this meeting, it is expedient to present a petition to the Legislature of the State, at the approaching session, praying for the amendment of the charter of said company, by which the capital thereof may be extended to the amount of three hundred thousand dollars, and the time for commencing the work may be continued until the 1st day of June, 1837.

Resolved, That for the purpose of opening from the valley of the Mohawk river, an easy, practicable, and direct communication to the extensive and valuable tract of land lying in the town of Morehouse and other towns in the county of Hamilton, it is expedient and necessary, in the opinion of this meeting, that the company should be authorized to extend their railroad to some convenient point upon the West Branch of the Sacandaga river, and that they be authorized to make a navigable communication from

said river through Pesico Lake to Lake Pleasant, in the county of Hamilton, by such routes as may be most eligible.

Resolved, That the present Standing Committee be authorized to take preliminary measures for carrying the foregoing resolutions into effect; and to adopt such other measures as they may consider proper, to promote the object of said resolutions.

Resolved, That the proceedings of this meeting be signed by the Chairman and Secretary, and that the same be published in the Mohawk Courier, Albany Argus, and Evening Journal, and in the New-York Sun.

D. B. WINTON, Ch'n.

HENRY DEVEREAUX, Sec'y.

Newton, Sussex, N. J., January 9, 1836.

To the Editor of the Railroad Journal:

Sir,—At a meeting held two days since at Branchville, in this county, a resolution was passed, but by accident was omitted to be published, that, among other Editors, the Editor of the "Railroad Journal," of New-York city, be requested to publish the proceedings, a copy of which I accordingly inclose. You will much oblige the public of this county, by giving publicity to the proceedings. Respectfully,

GEO. H. M'CARTER,
Secretary of the meeting.

RAILROAD MEETING.—At a meeting of citizens of Sussex county, friendly to a Railroad, convened, pursuant to notice, at Branchville, on Thursday, the 7th of January, Joseph Northrup, Esq. was called to the Chair, and George H. McCarter and Pierson Hurd were appointed Secretaries.

The object of the meeting having been stated to be, to devise further means of forwarding the construction of a Railroad through the county, the following resolutions were adopted:

Whereas, the county of Sussex, in its products, is not surpassed by any comparative portion of the United States; and possessing, as it does, immense and numerous water powers, throughout the heart and centre of her area; and whereas, it is happily placed by nature in the line of route from the great west to the city of New-York; presenting in such a manner as will most advantageously benefit her citizens, a route, not only practicable but remarkably easy for a Railroad, upon which can be applied the locomotive power with advantage, and without the aid of stationary engines, from the city of New-York to the Delaware River.

And whereas, the Legislature of the State of New-Jersey, in the year 1832, granted a Charter for a Railroad, under the name and style of "The New Jersey, Hudson and Delaware Railroad Company," for ninety-nine years, to commence at any point on the Delaware, from the mouth of the Paulins Kill to Carpenter's Point, and from thence to the Hudson River opposite to the city of New-York, or to join on any Railroad leading to the said city.

And whereas, the people of the county of Sussex, as well as other adjoining counties, being deeply interested in the accomplishment of this great and important work: therefore,

Resolved, That this meeting take the necessary measures to bring before the public, and particularly to the notice of the capitalists, the importance of their Railroad route, and the great advantages which will arise from its peculiar location.

Resolved, That we are persuaded, from the facts of the feasibility of the route, and its comparative shortness to any other, be-

ing from seventy-five to ninety miles the nearest, that through the counties of Sussex, Morris, Essex and Bergen, will exist by a Railroad, one of the greatest thoroughfares in our Union.

Resolved, That to further the objects of this meeting, a delegation be appointed, to confer at Trenton, with a committee of the Morris and Essex Railroad, and according to a resolution of their Board of the 29th December, concert measures to effect the construction of this Road: Whereupon, Joseph Greer, Samuel Price, Joseph Northrup, jr., Zenas Hurd, Joseph E. Edsall, Uzal C. Haggerty, John Hull, Lyman Edwards, and George H. McCarter were appointed that Committee.

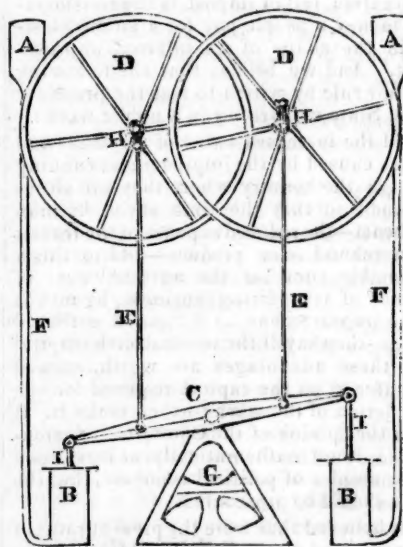
Resolved, That in the opinion of the meeting, the Commissioners of the New-Jersey, Hudson and Delaware Railroad Company should lose no time in bringing the stock of the said Company into market.

Resolved, That John Bell, Esq., Dr. Francis Moran, and Robert H. McCarter be a Committee of Correspondence, to carry into effect the objects embraced in the first resolution.

JOSEPH NORTHRUP, Ch'n.

GEO. H. M'CARTER, } Secretaries.
PIERSON HURD, }

"NOBLE'S AMERICAN HYDRO-PNEUMATIC ENGINE."



To the Editor of the Mechanics' Magazine:

Sir,—You will perceive in the Mechanics' Magazine of September, 1833, "A Suggestion for a New Motive Power," by myself, under the signature of G. N. The within described Engine I have presented to your notice, as being better calculated to show satisfactorily the principle upon which it depends for action, than the one above alluded to, as it is greatly improved. My attention has been drawn to this subject again, by the appearance of an article in your Magazine of November, 1835, headed "Galt's New Substitute for Steam," extracted from the London Mechanics' Magazine. By reference to the plan proposed by this distinguished gentleman, it will be seen that he intends elevating a piston, by means of a Bramah's press properly applied to force water under it; then, by discharging the water from below, to cause it to descend,

and by these means to acquire a motion and power as effectual and universal in its application as steam, without its danger of explosion. The question naturally occurs to a person examining the plan, "How is the press to be worked?" Undoubtedly by some auxiliary power, as steam, or by hand. If such is the case, (and that it is the article implies,) it should be recollected "that whatever force is applied at one point can only be exerted at another, diminished by friction and other incidental causes;" and also, "that whatever is gained by the rapidity of execution, is compensated by the necessity of exerting additional force." The power, then, of the Engine is just equal to the force necessary to actuate the press, "diminished by friction and other incidental causes." Hence, if the power of one man is sufficient to work the press, and consequently the Engine, it will be found that (supposing it applied to navigation) the man would move the boat with a greater velocity if he worked directly upon the oars or paddles. Now it will be seen that in the "American Hydro-pneumatic Engine" the necessity of a press is superseded, by continuing a pipe subjoined to the bottom of the cylinder perpendicularly upwards, and substituting the pressure of a column of water for the piston of the press. This pressure is, in its turn, suspended for a time by a pre-existent cause, which is put in action without a direct application of force. An engine might be worked with water by means of vertical pipes subjoined to a cylinder containing a piston, and the piston would be elevated with a force proportionable to its perpendicular height of pipe. If the water be now discharged from below the piston, and the supply obstructed, it will descend by its own gravity and the pressure of the atmosphere above—a vacuum being formed below by the discharge of the water. But the upward motion of the piston will be the most powerful. Now if a cylinder and piston be attached to each extremity of a working beam, the one will be exerting its maximum, while the other is exerting its minimum force, and the motion will be equalized. It is probable this method of using water where the fall is great and the supply small, is the most advantageous.

In the "American Hydro-pneumatic Engine" the same water is used continually, without any additional supply, except what is necessary to compensate for loss by evaporation.

References.—BB are two strong cast-iron cylinders, similar to those of a steam engine, but open at the top, containing pistons, fitted and packed in the usual manner with piston-rods. C, a working-beam, attached by fixtures for preserving a parallel motion to the piston-rods at each extremity. G, gallows-frame, for the support of the working-beam. DD, two balance wheels, moved by the shackle-bars EE, by

the cranks HH. FF, are two pipes subjoined to the bottom of the cylinders, no continuing perpendicularly upwards, to any height not exceeding 32 feet. AA, are two air-tight chambers, attached to the top of the vertical pipes. There are slides or valves in the chambers, by which they can be made air-tight, or opened at the proper time. Also pipes for the conveyance of carburetted hydrogen gas, communicating with an iron retort or generator of gas. The slides for admitting and excluding the air, and apparatus for admitting and igniting the gas, and also the parallel motion, are not represented in the drawing. The drawing and description above is thought sufficiently simple to be well understood, without any additional trouble to your engraver, as the machinery for effecting the changes in different stages of the action is so simple as to suggest itself very naturally to any one.

We come now to the manner of putting it in operation. Water, or any other fluid, may be employed. The pipes and cylinders being filled, let the jet of gas in one of the chambers be fired, and the valves of the chamber closed, rendering it air-tight. The combustion of the gas produces a vacuum, raises the fluid in the pipes from beneath the piston, and allows the other piston to raise by the pressure of the column of fluid in the other pipe. The vacuum is now destroyed by opening a communication with the external air, and the vacuum being produced in the other chamber, the water returns to its original position, elevating the piston. Thus, a regular reciprocating motion is obtained, with a force equally applicable to driving all kinds of machinery with steam, with none of its danger. And the expense of working is comparatively small, nothing being requisite but a small fire for heating the retort.

It will also be seen that there is a limit to the size, and consequently power, of this Engine, as the pipe for raising the fluid employed cannot exceed 32 feet in height where water is used, and so in proportion to the density of the fluid mercury, oils, and other fluids may be made use of. And a gain, considerable difference may be made in the motion of this Engine by the comparative size of the pipe and cylinder. Where the pipe is small with reference to the area of the piston, the motion will be slow, with a great effective force, and the velocity will be greater where the pipe is larger, with less force. In the fast motion a greater quantity of the gas is consumed in a short time, and it is probable the same quantity is consumed in a longer time in a slow motion. Thus far I have endeavored to show, in my humble way, the principle upon which my "Hydro-pneumatic Engine" depends for its action. As before stated, I know not what Mr. G. It proposes, any more than is contained in the article in your last. But lest he should

have hit upon my plan, I have published this, and shall claim the priority of invention, as I exhibited drawings of this nearly five years ago. It is a fact worthy of notice, that many important inventions of American origin have been brought out in England as original. Your talented correspondent, RUFUS PORTER, makes mention of one case, in the Rifle with a revolving breech—and there are many others.

The Aeronautical Steam Car published by your correspondent, Rufus Porter, is indeed very similar to the one proposed by me, and the coincidence is somewhat remarkable: it appears that both communications were received at the same time. But it was unnecessary for Mr. Porter to have supposed that the public would have thought he had taken any thing from mine, as his communications to this Magazine are of such a nature as to convince any person that he is a man of different stamp.

J. BUTLER G. NOBLE.

Dexter, N. Y., Dec. 17th, 1835.

From the London Mechanics' Magazine.

SELECT COMMITTEE OF THE HOUSE OF COMMONS ON ARTS AND MANUFACTURES.

MINUTES OF EVIDENCE.

Mr. John Jobson Smith, of the firm of Stearns, Smith, and Company, Iron Founders, Sheffield, examined:—

What branch of manufacture do you particularly pursue?—Iron foundry, applied to ornaments.

Have you occasion to have models made to a great extent?—We expend about 1,500*l.* a year in the production of models of this kind for stoves and fenders alone.

[The witness produced a model of a stove front.]

Are your models, some of them, very beautiful?—They are very beautiful.

Has Sir Francis Chantrey expressed any opinion upon them?—Sir Francis Chantrey has seen some of them, which he said were the finest specimens of iron manufacture which he had seen in the kingdom.

In those works of art, how far is the inventor protected?—There is no protection at all; we have sent out such a thing as that on Monday morning, and it has been to Manchester, back again to Sheffield, and copied and returned to Manchester before Saturday night. The model which I am now speaking of cost us 50*l.* for men's labor.

Is the copy as good as your original work?—It is not; but they sell them so much cheaper, because they pay nothing for the production.

This, of course, is great injustice, and serious loss to the persons that invent the designs?—It is so great a loss, that we shall give up continuing it; I suppose that more than one-half of the patterns for stove-grates and fenders used in England have originated with us, but the piracy has come to such an extent, that unless there is some protection we must give it up altogether.

What would you suggest as a protection?—I should suggest some place, such

as the National Gallery or Somerset House, where those things should be registered and some mark put upon it, such as the royal cipher or crown, denoting the registry, and a protection given for a certain time, three years, perhaps.

Are you aware of the system by which patterns are protected in France?—I am not aware.

In the manufacturing towns of France there is a body consisting of one-half workmen and one-half masters, and to them the preservation of the patterns is confided by the law; the pattern is examined by this body, whose knowledge of the manufacture is sufficient to ascertain that it is original; the right of the presenter of it is recorded, with a given date, a small sum is paid for a protection for a certain number of years, and that record and the preservation of the pattern which is deposited in the hands of this body, enables him at once to enter legal proceedings against any pirater of the patent; do you think any such system of protection could be brought to bear in England, or can you suggest any better system of protection than that?—I should almost fancy that it would be impracticable in this country, because there is not such a location of the casting of iron.

Do you think a central board would answer the purpose?—I should think the object might be effected by a central board, where an actual cast of the original model might be deposited and registered, and left there a certain time for examination as to its originality, and the fact of its being registered might be proof of its originality after a certain time.

Would not the great difficulty be, that the persons who purloined patterns are ordinarily very inferior men, who could hardly repay the damage they have done?—It is not the case in articles of this kind, because there must be a considerable capital invested in the manufacture to produce it.

You think if you could verify the fact of your being the inventor, there would not be much difficulty in inflicting the penalty?—I think not.

You think it would not be worth the while of the inventor to go to the trouble and expense of registering unless the invention was worth protection?—No.

What are the class of artists that you employ for the production of patterns?—Some artists in London have been employed to make patterns for this description of goods. The young man that made this which I have produced has had no education in the art; he has studied from nature altogether, and this is a specimen of his production; he has risen so as to have the reputation of being the first in the trade.

Is he a person of considerable natural talent?—So much so that we have given him a share in the business on account of his natural talent.

Are those models drawn upon paper?—Yes; and if we were to confine ourselves to publishing them on paper, the law would give us a title to protection for them, but as soon as we bring them out in the form of a manufactured article we lose all right and title.

Are there several artists in Sheffield capable of producing such models as these?—There are several.

Have they increased of late years?—No.

Do they get tolerable wages?—They do not get very good wages, because the manufacturers in the neighborhood so depend upon piracy, that they do not employ them; but if protection were afforded them, each manufacturer would be forced to employ an artist.

You think that if art were better protected in this country, there would be a greater demand for beautiful designs?—There would, because the general taste is so much better than it was, that very superior things are now in demand.

To what do you attribute the improvement in the public taste?—I have sometimes attributed it to the fact of there being so many fine models in plaster for the external and internal decorations of rooms, by which means they have become better spread.

Do not you think that the opening of our intercourse with the continent has led to a great improvement in the national taste?—It has. French ornaments and French style have become introduced into this country, and become ingrafted into our own style.

Have you been able, notwithstanding the heavy duties upon this species of article, to export any to France?—No; we can send none to France; there have been some smuggled to France.

Do you think that the foreign models are superior or inferior to the English?—In this branch of manufacture I think they are inferior.

Are you aware that grates are not used in France?—They are used in France, I believe; they are porcelain grates very generally.

Are there persons employed at Sheffield to form those designs on paper?—No.

Have you attended to fenders as well as grates?—Yes.

Are the artists employed at Sheffield generally uneducated, or do they undergo some previous education in art?—They have had no education at all; it is a few men of natural talent, who have been accidentally directed to drawing very early, who have followed it up in this way.

Do you know any place in this country where a young man could obtain such knowledge?—No.

Have you a Mechanics' Institution at Sheffield?—We have.

Do not they instruct young men gratuitously in design?—They have got several works of design, but there is no instruction given; those works, however, have been of great service.

Do you think it would be a good thing to extend the means of instruction in design among the people?—Certainly.

And especially to open collections of the best specimens?—Yes.

Have you often heard among artists a wish expressed that the knowledge of art should become more accessible to them?—Yes.

Do you know any class of persons in this country who are capable of teaching

that kind of art to which you allude?—I am not aware that there are any except at very great expense.

Have the parties who draw those patterns been instructed at all in drawing?—Not at all.

And the state of the law is such that there is little encouragement to artists?—A capitalist will not purchase the higher order of talent, because no sooner does he produce it than it is stolen from him.

What can an artist obtain per week by devoting his time to the production of models, in Sheffield?—About 3*l*. or 4*l*. if he is a clever man.

It is then the best paid labor?—It is.

How many artists do you suppose in Sheffield are solely employed in producing models?—Not above four.

Have they been all successful?—One of them has not been very successful.

Do not you think the public taste is so much improved that encouragement would be found for the production of articles more and more beautiful?—We find that we cannot produce articles too expensive for the public taste of the present day. Could we employ artists of a higher character, I am satisfied that the public would buy whatever was produced.

You think that cost would be no barrier to the sale of beautiful articles of art?—No; I should not myself hesitate in expending 200*l*. or 300*l*. in the production of a model for a grate to-morrow, if I had protection for it; but now it is certain that every thing worth pirating is pirated in three months; many things that are very good are pirated in fourteen days after the time of their production.

As the taste is perpetually varying, how long would you conceive a sufficient protection to a pattern?—I think three years would be the least. The custom of the manufacturers of those things is to visit their correspondents once in six months, and it frequently happens that there is some reason for not having a new thing at the time, and it is frequently a twelve-month before a pattern comes fairly before the public. I think we should have a fair protection for three years.

Unless you give rather a long period to the protection of a design, is not the effect of it to allow only a man of large capital to reap the advantage from the protection, because he only can put out a sufficient quantity of the pattern to remunerate himself?—Yes; every person to produce things of this kind must keep an extensive establishment about him. Besides the payment of the designer and the modeller, there must be workmen who get high wages after they have been designed and modelled.

Would the amount of capital employed in your business depend upon whether you had a protection for two years or three years?—No.

Does what you state apply, not only to your own line, but to all other lines in Sheffield?—Yes.

And more especially to steel and plated goods?—All the articles of plated goods that are stamped.

Have you conversed with persons whom you think most capable of judging of the

propriety of legislative measures to protect such inventions?—I have.

Is the plan you have suggested of a central board the result of your inquiries among them?—It was my own opinion. I have not spoken to others respecting the details of the protection, but only generally; and I have the authority of Sir Francis Chantery to say, that he decidedly coincides in my views, and he thinks that it is most desirable that something should be done for the protection of arts of design.

Do you consider that the suggestion you have made would be practicable without interfering with the general convenience of manufacturers throughout the kingdom?—There is a certain class of manufacturers whose convenience it would most materially interfere with, in the same way that the police interfere with the practices of certain men.

You say that you think you ought to have it for three years; by what means could the numerous manufacturers of similar articles throughout the kingdom know when the period had expired?—I would say, that upon each article registered there should be a royal cypher and a crown cast, and a penalty should be attached to the casting that without a register, and there should be a penalty attached to casting it after the period of protection had expired, so that the public would know what articles were under the protection.

Suppose you put a crown upon an article on the 27th of July, how could a man that makes similar articles in Scotland, upon seeing one of those grates, discover from it whether your protection commenced in 1835 or 1837?—There would be the central register here, which should be open to the public, and he might obtain a drawing of any particular design by applying to the Register-office, and if it was worth his while to make it, it would certainly be worth his while to apply for a drawing of it; but if it was necessary, the date might be put upon most things; upon a large article it might be done with the greatest facility, but there are many things so small, that we could hardly put the date upon it; for instance, an ornament that would have to be cast in the sand.

Do not you think, that if there was not the facility of copying that now exists, any new invention would be more slowly promulgated through the people?—We visit every town in England twice a year, and therefore the whole country has an opportunity of having those things if they please. The fact is, that instead of each house making designs for itself, or each employing an artist competing with the artist of another house, there are not above two or three now producing models for the whole of the kingdom.

Do you think it would be possible to effect the object in this way, by allowing the inventor to permit other persons to use the invention upon payment of a certain sum to himself?—I do not think that could be done. I think men would be more disposed to produce their own, than to live upon the reputation of their neighbors.

Is not there great difficulty in discovering what is a distinct pattern, and what is

only a variation from a previous pattern?—There is the greatest difficulty there; but I think persons would not be willing to produce a pattern that was doubtful as to its originality.

Do not a great number of ornaments consist of a combination of old materials, and is it not likely that any other individual might combine these materials in a manner so similar as to make it difficult to know whether he had the object of piracy in view, or whether the similarity was not casual?—There would be so much of the particular mind and style of the artist, as to fairly constitute an original.

Is not this particular grate now before the Committee a combination of common ornament?—There has never been anything approaching this before.

Unless it were so distinct, would it be worth your while to pay so much to your designer for it?—Certainly not.

Mr. John Martin examined:

You are well known as the painter of many eminent works: in your early professional education, had you occasion to acquire a knowledge of those manufactures that depend somewhat on the arts?—Yes.

State what branch you became acquainted with?—That of coach-painting.

What information can you give us on this portion of the subject?—I fear very little; only with regard to art there is great deficiency in drawing and coloring, as we know by the works on coach panels, but there is capability of a great deal of improvement, with the assistance of schools, or rather museums.

It would give, you think, a greater development to art?—Supposing, at museums, such as the British Museum, there were professors capable of instructing; I mean for the study of the human figure, landscape painting, architecture, and every other useful branch.

Have you pursued any other branch of manufacture connected with the arts?—China-painting; when I first came to London it was just going out of fashion, for it depends on fashion when not sufficiently advanced by the assistance of art.

What do you think of the state of art in regard to china-painting?—It is very low indeed, in consequence of the deficient knowledge in drawing and the arts in general; I believe it has gone down considerably since Mr. Muss and Mr. Marsh (who was a very eminent flower-painter at that time) left it.

Do you suppose that instruction is required for the artist in china-painting?—Yes, a knowledge of drawing is decidedly necessary; it was their knowledge of drawing, &c. that made Mr. Muss and Mr. Marsh so superior to others; but owing to the decline of china-painting they were compelled to leave it; and it has since entirely gone to the ground.

When you speak of painting in china, do you include in that enamel-painting?—Painting on china is a sort of enamel-painting, but that which is generally understood by enamel-painting is the style in which Mr. Bone and Mr. Muss attained such pre-eminence; that it is strange that so splendid and truly national a collection

as Mr. Bone's "Eminent characters of the Elizabethan age," should not long ere this have been lodged in the British Museum or National Gallery.

Have you turned your attention to the difference or the relative state of china painting in France and England?—I have seen some French painting on china, and upon the whole I think the finish is much higher.

Do they draw better?—Yes; the French are better draughtsmen, almost in every thing; I suppose they have a better opportunity of learning; besides it is patronised by Government.

You think for china-painting that instruction in correctness of design is very much wanted by our artists?—Yes.

For instance, you mean in anatomy, perspective and proportion?—Yes, every branch of art might be obtained in a museum where every one is permitted to go; but there are no professors in the British Museum, and the students can only learn by seeing others draw on the spot from things which are worth drawing; the Elgin marbles, for instance.

Do you not think it desirable that an artist should possess a knowledge of anatomy?—Certainly, for the drawing of the human figure or animals.

Might it not be desirable to give them opportunities of understanding *ab initio*, beginning with the skeleton, and going on to the whole proportion?—Yes.

And the study of the muscles?—Yes, and proportion, which has never been attended to.

Would a young man learn all these, according to this division of labor in the art, merely by a museum?—I think so, by proper masters.

You would have masters?—Yes; masters are necessary to give the proper direction to the pursuits of the student; but one master might teach two or three branches of the art, as follows: one master should teach anatomy and proportion; another, architecture, isometrical perspective and perspective; a third, landscape and nature in general; indeed, professors might be appointed to teach every branch of art, science, and literature; as in the British Museum every thing requisite is on the spot, and few alterations in the establishment would be needed. The National Gallery, and the National Gallery of Practical Science, might become branches of the British Museum. The grand object of a student should be to divide his time so as not to lose any, and not to give too much study to one pursuit or branch of the art. I firmly believe that the arts are useful to every branch of manufacture in the land; there is hardly a branch one can name that is not useful, from the lowest to the highest state of society; even to our legislature, drawing is useful, for they are not capable of judging of a plan without a knowledge of it; and they are consequently compelled to apply to practical men, and sometimes to dull-headed practical men, who are likewise often unacquainted with drawing, to have their opinion on any new principle in plans that may be laid before them.

Have you any other observations to offer as to china-painting?—No more.

You conceive, that were the artists instructed better in the principles of drawing, by improving the beauty of their productions, you would extend their sale?—Yes, and it would not depend too much on fashion, as it did when it was merely a passing thing, except that it would pass into other countries, and the beauty of design and workmanship would be admired in foreign countries, and be valuable in the commerce of that article.

At present, in china-painting, do we invent designs; or simply copy old ones already existing?—When I commenced, I invented my own designs, but that was peculiar, perhaps, to me; Mr. Muss and Mr. Marsh used occasionally to design their own.

At present do we invent as much, or copy more?—It has fallen so low, that what is done is not worthy of being called invention; the French are beating us hollow.

Independently of extending the sale of works of art, you would think you would confer on them a permanently intellectual interest, were the artists well instructed?—Yes; when we understand drawing, we cannot bear to look at a thing ill drawn; it affects the feelings in an uncomfortable manner.

Do you not think that the Wedgwood ware, which is made from the cheapest and commonest materials, by being made of beautiful forms and being covered by beautiful design, has attained a rank it otherwise could not have obtained?—Yes, certainly; they are beautiful works of art, and though of the commonest materials, we are delighted with the forms. Painting will only interfere with the beauty of the form when it is very excellent; it is a rule in composition never to put an ugly object before a graceful one.

You mean that genuine beauty becomes permanent, and independent of fashion?—Yes, accidental circumstances can never affect real beauty; I have seen beautiful pieces of china in form disfigured by bad painting; in consequence of that, I have my china generally without any painting, as I like the form undisturbed; and though the other cost more, I would rather have given the larger price for the plain china, than for that which was painted, unless the painting was good.

Do you think china-painting might become an extensive means of developing designs?—Yes, it is perpetually before us; every day we see china; at all our meals the elegant and beautiful china is always before us; we are delighted with a piece of beautiful workmanship, and it might be rendered very cheap if there were a great number of clever draughtsmen as china-painters, but you could not find them now.

Few things come so constantly under the eye as china?—No, very few.

Can you give any information as to the state of glass-painting?—Yes, I was more occupied by glass-painting than any other branch before I became an artist.

Have the goodness to give the Committee such information as you have been induced to collect on the subject of glass-

painting?—Glass-painting has fallen almost to the same level as china-painting; but it might be greatly superior now to what it was in ancient times. There is an ignorant opinion among people that the ancient art of glass-painting is completely lost; it is totally void of foundation, for we can carry it to a much higher pitch than the ancients, except in one particular color, which is that of ruby, and we come very near to that. We can blend the colors and produce the effects of light and shadow, which they could not do, by harmonising and mixing the colors in such a way, and fixing by proper enamelling and burning them, that they shall afterwards become just as permanent as those of the ancients, with the additional advantage of throwing in superior art.

Do you think that the glass-painting artist wants instruction in correctness of design as much as the china-painter?—Yes, more, as it is a higher branch of art; but one of the greatest drawbacks of glass-painting, and the great cause of its being neglected, is this: it is so liable to be broken, that no person can venture to pay the artist sufficiently for his labor, on account of the thin and brittle material on which he is obliged to work.

You think there is a want of encouragement?—Yes, or else glass-painting must have surpassed all other branches of art in splendor, as it is capable of producing the most splendid and beautiful effects, far superior to oil-painting or water-colors; for, by the transparency, we have the means of bringing in real light, and have the full scale of nature as to light and as to shadow, as well as to the richness of color, which we have not in oil-painting nor in water-color.

When you were employed painting on glass, did you find the Excise laws present any great obstacle to the improvement?—Yes, that was the greatest obstacle. We intended to make experiments on plate-glass; I did, and succeeded with it, but the expense of plate at that time, in consequence of the heavy duty, finally put an end to those experiments, as we could neither afford to purchase such expensive glass, nor to erect larger annealing-kilns, for if not properly annealed, the glass is liable to fly. I believe I was the only person who made experiments on plate-glass; they were supposed to be successful, only I could not afford to carry them on, for the reason before given. This is the principal cause of the fall of painting on glass, but if I could have made my experiments duty-free, I should have succeeded, for the plate-glass is so thick that it would be safe from being broken by ordinary means, and it has besides another advantage, that plates can be obtained sufficiently large to obviate the necessity for those bars which interrupt the present works.

Are the artists who pursue glass-painting now well educated in drawing?—No, the want of that knowledge has helped its decline; Mr. Hedgland, the architect, Mr. Hooley and Mr. Oldfield, are, I be-

lieve the principal glass-painters remaining.

At the present time you think the cause of the badness of execution is owing to the want of education in drawing?—Partly so; I should have painted some of my own subjects, as the effect produced on glass would be particularly adapted to them, if the experiments, &c. had been less expensive. I have always regretted the cost of the experiments, as works executed on plate-glass on a very large scale would have been most magnificent in cathedrals or great public buildings; the knowledge and experience we had gained from our various experiments would have enabled us to produce grander works than had ever yet been seen in public buildings. I did not leave this branch of art without establishing a mode which has been, and will remain in use as long as glass-painting is an art.

Why did you discontinue it?—I could not get a sufficient price for a highly-finished work to pay for the hazard; I painted some very highly-finished paintings which were purchased by Lord Ennismore, who was very fond of glass-painting, and I finished Mr. Charles Muss's works, when he died in 1824.

After you left glass-painting you became historical painter and engraver, and have executed your own designs?—Yes.

Is there any protection for copyright in those original compositions?—Not the least; for the expense is so great, that even if we gain our action we sustain great loss, and can only recover so much as we can prove has been sold; and it is no easy matter to prove more than the sale of one or two prints, although we may know a thousand have been sold; we are therefore ruined if we go to law. I have in my own person experienced great losses from the system, as the French copies of my works are brought over from France and sold in every part of the country. I was told that various shops in Windsor had got my works lithographed and selling at very low prices, to my complete ruin; and if I am not protected by some new law, I shall be compelled entirely to leave that branch of the profession by which I live; for my pictures are so extensive and cost me so much labor that I cannot subsist by painting, as very few can pay me 1,000*l.* or 2,000*l.*, and I cannot execute them for less.

What is the principal defect; this expensiveness of the law?—Yes, in a great measure; it costs so much money to carry the law into execution, and as it is not exactly clear, we are not sure, after all, that we shall not be beaten, though our proofs are ever so good. The person may come forward with false witnesses, and swear that he did not sell.

But you have obtained an injunction?—No, I cannot get an injunction; I applied for one to prevent a person from exhibiting a copy of my work in a sort of diorama of Belshazzar's Feast, in Oxford street, and that person contested it with me. This diorama was a most infamous piece of painting, and the public

were given to understand that I was the painter; this was ruining my reputation, and at the same time taking that from me which ought to be my own, my copyright. I ought to have the power of demanding so much money for permission, but this copy was made not only without my leave, but my name given as the painter. I endeavored to stop the exhibition by an injunction, but was referred to a jury.

Is there any remedy that presents itself to your mind for protection?—Yes; I think I could be protected with regard to the law of copyright of engravings, &c., and take this opportunity of showing how incorrect is any opinion that may prevail as to the sufficiency of the present protection; for the plagiarist is not only safe from prosecution on account of the expense of such prosecution outweighing all the advantages that can be derived from a verdict; but as in my own case, he even comes into the field with a cheaper production, supported by all the effect of the advertisements, and other expensive means of publicity that my own performances had led me to adopt. He not only robs me of my ideas, but establishes a lucrative trade on the effects of my pecuniary outlay; wherefore I have always thought, and I still think, that the copyright should remain in the person of the designer, so long as he lives, and of his heirs, so long as they possess the works, the same as any other property, unless, of course, there be a distinct written agreement to the contrary. That it should be so is obvious, but there is not in fact any real protection to copyright, owing to the uncertain state of the law on the subject. Supposing, for example, that in the case of pirated copies of my engravings, I do by chance obtain a verdict from a jury, I can only recover the amount of what I can prove the defendant to have actually sold, which is my sole compensation for the thousands that are known to have been sold, but which it would be impossible to prove by evidence, since open book accounts of such transactions are never kept. Or take another case, of a picture being copied for a dioramic or other exhibition; suppose that on applying for the injunction, his Honor is not able to distinguish the difference between a picture of *Belshazzar's Feast* and a piece of lace, and leaves it for a jury to decide whether a diorama is to be considered a painting, or a copy coming under the meaning of the Act; all the satisfaction I obtain is heavy law expenses, with a certainty of an enormous increase if I hazard an action. The above cases are enough to prove that there is no efficient protection; but there are many other ways of infringing a copyright, one of which is, that any unprincipled person may copy an early and most imperfect work, and publish it as if just executed, although the publication of such a puerile attempt would never have been sanctioned by the artist from a regard to his own reputation. I will venture to suggest a method of protection; a committee of gentlemen and artists might be appointed to sit at the

museum about once in the fortnight or month; say in the following towns, namely, for England, London, Bath, Liverpool, Birmingham, Hull, and Newcastle-upon-Tyne; for Scotland, Edinburgh and Glasgow; and for Ireland, Dublin and Cork, for the purpose of receiving and registering impressions of original works, after which the copyright should be considered as fixed; and all false copies found in any part of the United Kingdom, after the copyright has been fixed, should be seized. We should, likewise, have the power of seizing all foreign copies as smuggled goods, and treating the possessors accordingly. Thus no print should be protected unless deposited at the Museum, or whatever other place or places might be appointed; I think by that it would be put a stop to. I would have it at the British Museum, certainly; it would be desirable also to have them in each manufacturing town.

(To be continued.)

EXPERIMENTAL RESEARCHES INTO THE LAWS OF THE MOTION OF FLOATING BODIES. By J. S. RUSSELL.—It was the object of these inquiries to assist in bringing to perfection the theory of Hydrodynamics, and ascertain the causes of certain *anomalous facts* in the resistance of fluid, so as to reduce them under the dominion of known laws.

The resistance of fluids to the motion of floating vessels is found in practice to differ widely from the theory, being, in certain cases, double or triple of what theory gives, and in other and higher velocities, much less. These deviations have now been ascertained to follow two simple and very beautiful laws:—1st. A law giving a certain *emersion* of the body from the fluid as a function of the velocity. 2nd. A law giving the resistance of the fluid as a function of the velocity and magnitude of a wave propagated through the fluid, according to the law of Lagrange. These two laws comprehend the anomalous facts, and lead to the following

Results.

1. That the resistance of the fluid to the motion of a floating body will rapidly increase as the velocity of the body rises towards the velocity of the wave, and will become greatest when they approach nearest to equality.
2. That when the velocity of a body is rendered greater than that due to the wave the motion of the body is greatly facilitated: it remains poised on the summit of the wave in a position which may be one of stable equilibrium; and this effect is such that at a velocity of nine miles an hour the resistance is less than at a velocity of six miles behind the wave.
3. The velocity of the wave is independent of the *breadth* of the fluid, and varies with the square root of the *depth*.
4. It is established that there is in every navigable stream a certain velocity at which it will be more easy to *ascend* the river against the current than to *descend* with the current. Thus, if the current flows at the rate of one mile an hour in a stream four feet deep, it will be easier to *ascend* with the velocity of eight miles an hour on the wave, than to *descend* with the same velocity behind the wave.
5. That vessels may be propelled on the summit of waves at the rate of between twenty and thirty miles an hour.—[Proceedings of the British Association at the Dub.

lin Meeting, August, 1835, London and Edinburgh Philadelphia Mag., vol. vii., p. 302.]

ON AN ECONOMIC APPLICATION OF ELECTRO-MAGNETIC FORCES TO MANUFACTURING PURPOSES. By ROBERT MALLETT.—The separation of iron from brass and copper filings, &c., in work-shops for the purpose of the refusion of them into brass, is commonly effected by tedious manual labor. Several bar or horse shoe magnets are fixed in a wooden handle, and are thrust, in various directions, through a dish or other vessel containing the brass and iron turnings, &c., and when the magnets have become loaded with iron, it is swept off from them by frequent strokes of a brush. This is an exceedingly troublesome and inefficient process.

It appeared to the author that a temporary magnet of great power, formed by the circulation of an electric current round a bar of iron, might be substituted advantageously. The following is the arrangement which he has adopted. Several large round bars of iron are bent into the form of the capital letter U, each leg being about six inches long. They are all coated with coils of silk-covered wire, in the usual way of forming electro-magnets of such bars, and are then arranged vertically, at the interval of five or six inches from each other.

All the wires from these coils are collected into one bundle at their respective poles, and there joined into one by soldering, a large wire being placed in the midst of them and amalgamated. A galvanic battery is provided, which, if care be taken in making the junctions at the poles, &c., need not exceed four, or, at most, six pairs of plates, of from twenty inches to two feet square.—The poles of this terminate in cups of mercury, which are so placed that the large terminal wires of all the coils can be dipped into them, or withdrawn easily.

The rest of the arrangement is purely mechanical. The required motions are taken from any first mover, usually a steam engine. The previously described arrangement being complete, a chain of buckets is so contrived as to carry up and discharge over the top of the magnets a quantity of the mixed metal particles: most of the iron adheres to the magnets, while the so far purified brass falls into a dish or tray placed beneath to receive it. This latter is also one of a chain of dishes, the horizontal motion of which is so regulated that the interval between two dishes is immediately under the magnets, in the interval of time between two successive discharges of the mixed particles on the bars.

At this juncture the communication between the galvanic battery and the magnets is interrupted by withdrawing the wires from the cups of mercury, and the result is, that the greatest part of the adhering iron drops off and falls in the space between the two dishes. The next dish now comes under the magnets, the communication is restored, and a fresh discharge from the buckets takes place, and so the process is continued.

Some iron constantly adheres to the magnets but this is found of no inconvenience, as it bears but a small proportion to the total quantity separated.

The author has had an imperfect apparatus of the sort above described at work for some time, and has found it to answer; and suggests the application of electro-magnets for somewhat as analogous objects in various manufactures. He particularly mentions needle and other dry grinding.—[Proceedings of the British Association: London and Edinb. Phil. Mag., vol. vii., p. 305.]

HUNTER'S STONE-PLANING MACHINE.

Fig. 1.

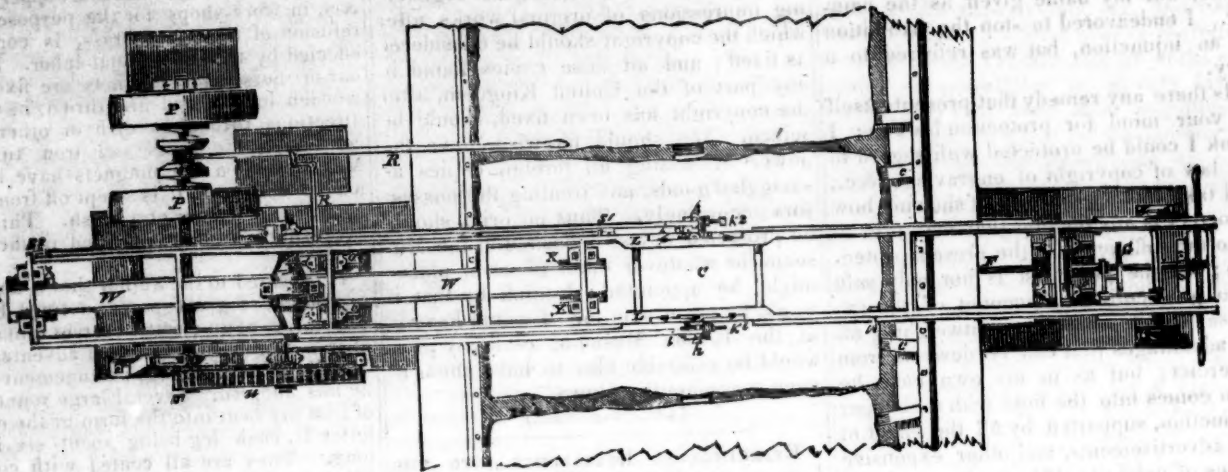
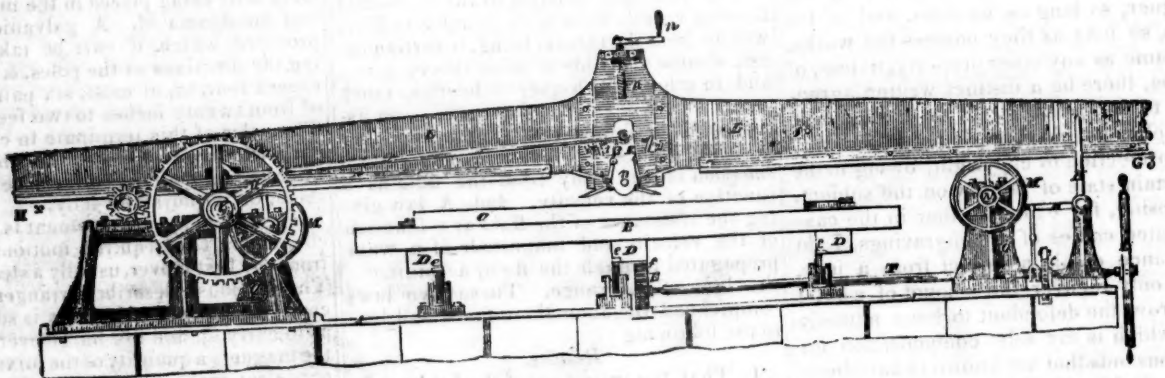


Fig. 2.



ELEVATION.

Fig. 3.

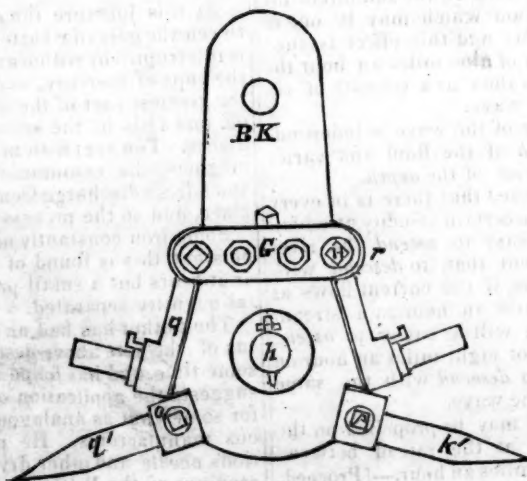
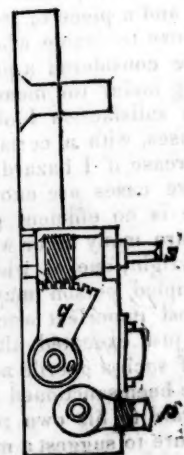


Fig. 4.



From the London Mechanics' Magazine.

HUNTER'S STONE-PLANING MACHINE.

Among the few exceptions to the universality of steam-power as a first mover, which existed a year or two ago, by far the most important was its very limited applicability to the cutting, dressing, and fashioning of stone. Many attempts had been made—some of them by machinists of first-rate eminence—to construct a steam-power machine which should supersede the mason's hand-mallet and chisel; but one and all had proved entirely abortive. Difficulty there was none in contriving steam-machinery that would slice or hew in pieces, and even with great nicety, the stoutest blocks which the quarry could furnish; but the difficulty lay in this, that the immense friction to which metal points or edges are subject, when brought with great force and in rapid succession into contact with so hard and gritty a material as stone of every description, caused so prodigious a waste in tools, that it far more than counterbalanced any advantage that could result from superior celerity of execution.

The merit of overcoming this serious objection, and of adding thus one more to the triumphs of the steam-engine, belongs to Mr. James Hunter, the Superintendent of the Leysmill Quarries, near Arbroath. After several years of thinking and contriving, and experiments without number, he has invented a power stone-planing machine, which is so ingeniously and judiciously contrived, that it cuts and dresses the largest blocks of stone not only with as much exactness as can be done by hand, but with so little injury to the tools, and with so much rapidity, as to leave all hand labor, in point of economy and despatch, at an immeasurable distance.

We have before presented our readers with some samples of the wonderful capabilities of this machine, (see the Report of Messrs. Carnichael and Kerr, C. E., published in our 612th Number,) and we are glad to have it now in our power to lay before them the first description which has appeared of the machine itself, to which we shall add some additional information of great interest which we have been favored with by the patentee respecting its performances.

The engraving (fig. 1) on our front page represents a plan of the machine as it appears in its complete state when fixed and ready for working, to a stone bed or foundation; and fig. 2 is an end elevation thereof. The steam-engine employed is omitted in both views.

The machine, of which AA is the sole or foundation plate, consists of three principal parts; first, a platform, which carries the stones to be planed; second, two tilt or cant blocks, which hold the planing tools; and, third, a traversing-frame, in which these tilt or cant blocks are fixed, and by means of which the tools are brought into action against the surface of the stone.

1. *The platform for the stones.* On the sole or foundation plate AA, three rows of traverse-rollers *a a a* are fixed. BB is the platform on which the stones CC are laid; it moves to and fro on the rollers *a a*, and

is formed of planks, four inches thick, laid across three longitudinal beams DD, and securely bolted thereto. The two parallel bars *b b* nailed to the surface of this platform are about an inch thick, and faced with plate-iron; they serve as ledges within which to secure and steady the stones CC, by means of loose chocks of wood of different sizes. Where the longitudinal beams DDD of the platform rest or bear on the traverse-rollers *a a a*, they are strengthened to meet the extra pressure by under-plates of iron *e e e*. To the bottom of the central beam a toothed rack *f* is fixed, which extends from end to end.

2. *The cant or tool blocks.* BK, BK, are two blocks fixed into the traversing-frame, one on each side, with two tools *i¹ i², k¹ k²*, in each. Fig. 3 is a front view and fig. 4 a side view, of these cant-blocks, on a longer scale than in figs. 1 and 2. They turn on studs *h h*, which are fixed in vertical sliding-blocks *m m*, which are moveable up and down by the screws and handles *n n*, so as to be adjustable to any thickness of stone that may be required to be cut. The two tools marked *i¹* and *k¹* are roughing tools, and those marked *i²* and *k²* are finishing tools. All are of a round form, and about an inch in diameter; the two finishing ones have chisel or broad mouths. Both sets of tools are fixed in wrought-iron tubes *o o* by means of adjusting screws *p p*, which tubes are turned so as to fit accurately into holes bored in the cant-blocks BK. To each set of tubes in which the finishing tools are fixed a short lever *q* is keyed on, the upper end of which is slightly curved and toothed, and above it there is a horizontal screw *r*, which works into the teeth of this lever *q*, so that by applying a spanner to the square head *s* of the screw *r*, the finishing tool may, through the medium of the screw, the lever, and the tube, be adapted with the greatest nicety to the surface of the stone to be planed and dressed. No such nice adaptation is necessary in the case of the roughing tools, and to them, therefore, no such adapting lever is applied. G, fig. 3, is the cover for the pivots of the screw *r*. Two brackets are affixed to the face of the vertical sliding-blocks *m m*, in the manner represented in fig. 1, and two screws, *t* and *u*, are inserted therein, which screws serve to limit the arc described by the cant-blocks BK, BK, in turning on the studs *h h*, as afterwards more particularly explained.

3. *The traversing-tool frame.* LL is a large sliding-frame, in the centre of which the working or planing tools are fixed, and which has a space of about six feet to traverse in, three on each side of the position in which it is represented in the engravings. This frame rests on four wheels or friction-rollers MMM, affixed to the shafts NN, which revolve in brackets OOOO. PP are two pulleys, which revolve on an axis fixed in the standards GG, one of which is worked by an open strap, and the other by a cross strap, so that they may revolve in opposite directions, and thus give a reciprocating motion to the frame LL. Q is a clutch between the pulleys PP, connected with the handle and crank RR, which are acted upon by studs or catches S¹ and S², projecting from the sides of the sliding tool-

frame LL in such manner as to make the clutch operate on each tool alternately. T is a pinion fixed to the end of the axis of the pulleys PP. U, a spur-wheel, into which the pinion T works, V the axis of this spur-wheel, on which axis there is fixed a pinion (not seen in the engravings), which works into a sliding-rack WW, the teeth of which point downwards. XXXX are the bearings on which the rack WW slides. YY is a strong beam fixed across the back of the rack WW, the ends of which project through the sides of the sliding-tool frame LL. ZZ are two connecting-rods, which pass from the ends of the beam YY to the blocks in which the planing-tools are fixed, as before explained. E is a pinion, which works in the toothed rack *f* on the under side of the central longitudinal beam of the platform B. F is a shaft, to one end of which the pinion E is fixed. G is a ratchet-wheel, near to the opposite end of the shaft E. HH is a pall and crank attached to a cross shaft, supported by the standards II, which acts on the ratchet-wheel G. I is a pin, fixed in the side of the traversing-frame LL, and which, as that frame moves towards the side Gz, catches the upright arm of the crank H, and presses it forward in that direction. K is a wheel, which, operating through the intervention of the shaft F, pinion E, and rack *f* on the platform B, throws it entirely back when all the stones upon it have been planed, or returns it under the planing tools if any part of the work requires to be gone twice over.

The mode of operation requires but little additional explanation. The platform being filled with blocks of stone, the vertical blocks *m m* are so adjusted that the roughing tools shall strike each block of stone as it passes under them, at such a depth below the top surface, as to sever and throw off before them large portions of the stone at a time, taking care always that the depth shall be within such limits as that the line of least resistance shall terminate in the top surface of the stone, so that the fractures shall all tend in that direction. When this adjustment has been made, the sliding-frame LL is to be moved towards Hx, and as it traverses in that direction the sliding-rack WW carries the cross-beam YY in the same direction, until the connecting-rods ZZ have drawn the cant-blocks over as far as the screw *t*, when the roughing tools *i* and *k¹* will be brought into operation against the stone, and so continue till the projecting stud or catch S comes in contact with the crank R, and throws the clutch off the pulley then in operation on to the other pulley, which will make the frame return in the opposite direction Gz. The sliding-rack WW carries back at the same time the cross beam YY, till the connecting-rods ZZ push the cant-blocks over against the screw *u*, when the tools *i¹* and *k¹* are brought into play, and so continue till the catch S² comes in contact with the crank, and again reverses the motion. At the moment of this last reversal of the motion taking place, the projecting pin I also throws over the upright arm of the pall and crank HH (in a manner similar to the yard-beam of a power-loom), and brings

forward the platform B with the stones for the next operation of the planing tools. The pall and crank H H falls back of its own weight into its former position, as soon as the pin I recedes from it. When the roughing tools are first brought into action, through the traversing of the frame L L towards H z, they commonly leave the surface of the stones in ridges, but the finishing tools being farther back, take off these ridges when returning, and so on till the planing of the blocks is completed.

No time is lost in clearing the platform of the finished blocks, as the men in attendance on the machine are removing the blocks at one end while the machine is at work at the other, and a minute or two suffices to return the platform. The frame L L generally traverses at the rate of 30 feet per minute, and a set of stones filling the platform from end to end, can be planed in about 45 minutes. As each tool wears it can be readily removed for the purpose of being repaired, or replaced by new tools by loosening the adjustments—crews p p.

The master feature of the invention appears to us to consist in the means provided for so adjusting the roughing tools (which have the roughest part of the work to perform), that they shall strike the blocks of stone as they pass under them, not upon the surface, as usual, but at such a depth below it, that the surface is driven off in large portions at a time. Not only are two or three tools thus able to do the work of a great many,* but the tools have time given them between each stroke to cool; or, to speak more properly, the strokes are made at such intervals that the tools never get sufficiently heated and softened to lose their original tempering. And hence this somewhat paradoxical consequence, that the greater the thickness of surface which the tools have to cut away, the greater will be their efficiency, and the less they will be injured; for the lengths of stone driven off at each stroke will always be proportional to the depth of the cutting, and the rest given to the tools in exactly the same ratio. We are informed that, in point of fact, the wear of iron is less by one-half in taking off two inches at a time than in taking off half an inch.

Another valuable though subordinate feature of the apparatus, is the ingenious manner of securing the tools in their places—the union of absolute fixedness while in operation, with the greatest facility for removing them as they are worn out and required to be repaired or replaced. The shaking or recoil after each stroke of the tools is stated to be so small, as to be hardly perceptible to the eye.

An important consequence of the equality of the force applied to the tools is, that the facing given to the stones by this machine is much smoother and sounder than any facing which can be given by the mallet and chisel. The surface of hand-wrought stones is always so bruised, or, what is technically called *dazed*, to a certain depth, through the unavoidable varieties of strength and direction with which

the chisel is applied, and this dazed portion has all to be rubbed off by the polisher before a sound face can be obtained. But in the case of the machine-planed stones, the surface is left in so nearly sound a state, that the labor and expense of after-polishing is reduced more than one half.

The stones, to the cutting and dressing of which this machine is advantageously applicable, must not, of course, be any of an exceedingly precious description—none of the rarer marbles for examples; but such as exist in so great abundance, that an inch more or less cut away from a surface is of no consequence, and such too as acquire their chief value from the labor bestowed on extracting them from the quarry, and dressing them for use. The sorts of stone to which the patentee considers it to be most applicable, are sandstones, lime-stones and freestones, in all their varieties.* The power and velocity requisite vary considerably, according as the stone is soft or hard. Thus, for example, the Arbroath, which is a sandstone of very close and firm grain, admits of a degree of speed many times greater than some of the softer sandstones; and requires a power just so many times less. Again, stone harder than the Arbroath would require both the strength of the machine and the power of the steam-engine to be proportionally increased.

During the last summer there were six of these machines at work in the Leysmill Quarries, which planed upwards of 170,000 feet of pavement. They are worked by one steam-engine of 6 horse power, which has to work besides two inclined planes, up one of which the stones are dragged from the quarry to the machines.

We have before spoken of the Report of Messrs. Carmichael and Kerr, C. E., on the performances of these engines, and must here content ourselves with referring our readers to it for some very important and satisfactory details on this head. The attention of the Highland and Agricultural Society of Scotland having been drawn by one of its members to this Report, their Secretary was directed to request W. F. Lindsay Carnegie, Esq., the Proprietor of the Leysmill Quarries, to favor them with "a statement showing the comparative expense of machine-dressed stone and that dressed by hand." The following is an extract from Mr. Carnegie's answer to this application:—

"In the first place, looking at the Report of the engineers (Messrs. Carmichael and Kerr), it will be seen that the wages of the people employed in dressing 4,400 feet, amounts to 6*l.* 15*s.* 6*d.*; this includes the wages of all employed in laying on, dressing, turning, and taking off the stones, and also the wages of a person employed in repairs and the construction of additional machinery. To the above may be added

*We are authorized by the patentee to state, that if any proprietor or lessee of a quarry, who may be desirous of trying the applicability of the machine to any particular species of stone, will forward a block of it in a rough state (carriage free) to Mr. Hunter Leysmill, near Arbroath, it will be returned to him planed and polished, along with an accurate report of the time occupied in the work, power applied, wear of tools, &c. Or, parties sending to Mr. Hunter two blocks capable of being turned into vases, according to patterns or drawings sent therewith, will receive in return one vase along with a report, &c. free of charge.

ed for coals 15*s.* (our local situation enhances this item considerably), and for interest of fixed capital, and wear and tear about 2*l.* The calculation will then stand thus:—

Wages	6 <i>l.</i> 15 6
Coals	0 15 0
Interest	2 0 0

4,400 feet, at 9 10 6

about four-tenths of a penny per foot. It is more difficult to state what the exact cost of dressing the same stones by hand would amount to. I may say, however, with perfect safety of being within the mark, that the stones in question could not have been dressed by hand at less than four times the cost by the machine, and that this is rather below than above the ordinary rate of difference.

"It was purposely left to the engineers to take their choice of any of the machines as they found them in the ordinary course of working, no notice having been given to the men, nor any preparation made.—As it happened, the stones in hand came from one of the most indifferent strata of the quarry, and the results shown came proportionately below the usual average.

"Had it been thought desirable to show off the machine to the greatest advantage, it might easily have been done, and without the slightest deception, very different results might have been brought out.—Thus, on account of their great weight, large stones, such as landings, grave-stones, &c. are previously squared in the quarry; when laid on the level, therefore, they fill accurately all the space the machine traverses.

"Suppose such a stone, 12 feet long by 6 broad, and 8 1-2 inches thick, and that it were required (an ordinary case) to be reduced to 7 inches in thickness. I am quite safe in saying, that the machine will do this in forty minutes, leaving the surface so smooth, that 9*d.* in hand-labor would bring the 72 feet to a perfect polish.

"Estimating as above the cost of working four machines for sixty hours at 9*l.* 10*s.* 6*d.*, forty minutes of one machine would amount to 6*d.*, but say an hour or 9*d.* as the cost of hewing 72 feet by the machine, that is about one-eighth of a penny per foot.

"To bring the stone to the same state by hand, the mason would require to go over it with four operations. He would, to speak technically, 1st, 'dab it over rough with a puncheon'; 2d, 'broach it close with a puncheon'; 3d, 'scabble it with a chisel'; 4th, 'angle drove it for polishing.' In this state, in consequence of the bruising operation of his chisel on the face being greater than that by the machine, it would cost twice as much to polish it.—The cost of the above four operations, at the lowest estimate, would be 2 1-2*d.* per foot. Thus the cost of hewing by hand and by machinery, would, in this case, be as 20 to 1.

"In estimating the outlay by the machine, ample allowance is made for the handling of the stones, the chief expense in the wages of the extra people attached to the mill, while nothing is charged for the assistance the mason would undoubtedly

*In a stone-planing machine lately patented, the capabilities of which were much talked of for a time, there were no less than from 30 to 40 tools, to be applied in rapid succession to the stone.

require in setting up and moving this stone. If this were taken into account, it would go far to double the comparative difference."

After receiving the above information, the Society thought the matter one of so much public importance, that they appointed a Special Committee of their number to repair to Leysmill, to "examine the machine in operation," and report the result of their personal examination. The Committee consisted of the following gentlemen:

Lord Panmure.
Mr. Carnegie, of Craigo.
Mr. Hawkins, of Dunnichen.
Mr. Millar, of Ballumbie.
Mr. Proctor, of Halkeston.

This Committee paid a visit to the quarries, accordingly, on the 29th of June last, and the following is their report to the Society:—

"With reference to the statements contained in a letter of date the 10th day of June current, from Mr. Lindsay Carnegie to the Secretary of your Society, your Committee are convinced that these statements are fully borne out, and beg to submit the result of their own observations—the following facts:—

"There were put upon the bed of the machine at the same time, three pavement-stones, in a rough state, and of unequal thicknesses, the first of which contained 12½ superficial feet, requiring to be reduced two inches in thickness; the second, containing 16½ superficial feet, requiring to be reduced three quarters of an inch; and the third, containing 18 superficial feet, and requiring to be reduced one inch and a quarter; the whole of which stone, amounting in all to 47 superficial feet, were reduced and polished in thirty minutes, including in this the time occupied in shifting the irons.

"Your Committee beg further to state, that with a view of comparing the working of the machine and hand labor, they interrogated Mr. Donald Mackay, master mason and builder, in Arbroath, who stated that to have accomplished the same work in the ordinary way by the hand, would have occupied a good mason five days and a half, at a cost of 15s. 9d., according to the present rate of wages in this part of the country; whereas, according to calculations submitted by Mr. Lindsay Carnegie, and which your Committee have every reason to believe correct, the expense would amount to about 1s. 7d.

"In addition to the trial above noticed, your Committee saw stones, of the hardest quality, from different quarries in the country, dressed by the machine with a corresponding advantage; and your Committee cannot close this report without expressing their conviction of the great advantages to be derived from the extended operation of Mr. Hunter's machine, as being the means of preparing for the market as pavement, a quality of stone, which, without its assistance, could never be turned to account, as also the great saving to be obtained by its application to this hewing and dressing of all sorts of freestone.

"Your Committee beg leave also to report, that by the same steam-power they saw in operation the same principle appli-

ed as an experiment to a turning machine, from which they are satisfied that it may be applied with economy and advantage to the turning of stone vases, and other ornamental work."

"Leysmill, June 29, 1835."

The concluding passage of the preceding Report recalls to mind that we have yet one of the most valuable properties of this machine to notice—namely, that besides facing and dressing blocks of stone, it can be made (with the help of a lathe coupled to it) to turn, bore, and hollow them as well. Columns, ballisters, vases, drilled chairs and sleepers for railways, &c., may all, by this machine, be produced with a degree of accuracy, despatch and economy, wholly unattainable by hand labor. We mentioned in our notice of the last Meeting of the Institute of British Architects, (vol. xxiii., p. 349), one remarkable proof of this, which Mr. Carnegie presented to that Society, namely, a handsome vase turned out of the solid block, in the course of a single day's work, twenty inches high, and eighteen across the mouth. But this is nothing, we find, to what Mr. Hunter is making preparations to accomplish in the course of next winter's leisure. He talks with great confidence of being able to produce vases four feet high!—exact copies of our finest antiques, in all but the ornamental tracery, which must still remain to be done by hand. Of the ease with which holes might be drilled in stones by such combined machinery, the following extract from a letter, which we have seen from an eye-witness, furnishes equally striking evidence. He is describing a first trial in boring made by Mr. Hunter. "The stone," he says, "was old quarried and of the hardest yolk, and 5½ inches thick, the bore 1½ inch diameter, and the time in going through the stone was exactly 2½ minutes; it ran through it like wood."

The Arbroath stone on which Mr. Hunter's machines have been hitherto chiefly employed has been long in great request for foot-pavements, market-places, kitchen floors, &c.; and now that it can be produced by means of machinery in any quantities, will probably become still more and more so. It possesses this great advantage over the Yorkshire flag, that it resists the damp much better and dries more quickly; while it is, at the same time, equally cheap. In this point of view it has but one rival, the Caithness flag, to which however it is, in uniformity and homogeneity of texture, vastly superior. In Scotland this species of stone, painted and varnished, is now getting into extensive use as a substitute for marble; it is a great deal more durable than Scagliola, and not half so expensive.

WINDMILL SHIP.—The *Biblioteca Italiana* mentions, that one Giuseppe Bruscetti, an engineer, has constructed a ship which is propelled in the manner of a windmill. "The vessel has two paddles like a steamboat, and the mechanism of the windmill is so contrived, that if there is any wind at all, from whatever quarter it may blow, the vessel is propelled by the action of the sails, and may be steered in whatever di-

rection is desired." We suspect that this is but an Italian resuscitation of some of the many schemes of the same kind which have been broached in England—two or three of them in our own pages. If Signor Bruscetti will consult our 16th vol., p. 65, he will see what he has to expect, should he ever attempt to carry his ideas into practice on a large scale.—[London Mechanics' Magazine.

BRUSSELS RAILWAY.—The projectors of this Railway took credit for 100,000 passengers only, as the number that would avail themselves of it in travelling between this city and Antwerp; but although it has not been opened more than five months, the number already exceeds 200,000.—[Brussels Paper.]

From the London Mechanics' Magazine.

SOWERBY'S PATENT IMPROVEMENTS FOR SECURING SHIPS' WINDLASSES.

Sir,—Many nautical men having complained of the want of publicity of many patent windlass in some of the distant ports, whilst it is being so generally adopted and appreciated in those where it is known, I will feel obliged by your inserting the accompanying description of its construction, action, and advantages, in your widely-circulated and valuable Magazine. As the safety of both life and property, as well as the quick performance of the voyage, so often depends upon the security and efficacy of a ship's windlass, improvements in its construction are of great importance to all connected with shipping, and, consequently, to a numerous class of your readers; to such the following may be found interesting, and for them it is more particularly written, by

Yours respectfully,

THOMAS SOWERBY.

Patent Windlass Works, near Shadwell Dock Basin, London, Oct. 7, 1835.

Fig. 1 is a section of the windlass body and side-view of the iron cylinder, which is firmly wedged thereon, with part of the flange broken off, to show the position of the patent iron pall and riding-chock when riding at anchor. The pall and riding-chock are each made on the segment of a circle, with teeth on their concave sides, corresponding with the teeth on the cylinder.

Fig. 2 is a front view of the same, and part of the windlass body; also of the wedge bolt, which is inserted above the pall to lock it when riding. The pall-plate is bolted to the pall-bit, and has a bolt passing through its flanges, by which the pall is guided when working. The shoe or leek plat is also bolted to the pall-bit, and, through a timber, to the deck, and has a bolt through its flanges for guiding the riding-chock, also a slit parallel with the deck for guiding the bolt passing through the wood or riding-chock wedge.

Action and Advantages of the Patent Pall.

Before getting the anchor, the riding-chock is ungeared from the cylinder by driving out the wood-wedge by a short row or lever, and the lock-bolt is withdrawn from above the pall. When the

windlass is hove round, the pall rises and falls perpendicularly in the succession of the teeth on the cylinder, thus palling at once every tooth on nearly a quarter of its circumference. It thus offers a more solid resistance than a series of palls, such as have been commonly used, and which are shown at fig. 3, and its action against the pall-bit is much nearer to the deck. It cannot possibly trip or be upset, as, from its wedge-like form, it becomes but more firmly fixed as the strain increases. Neither is it injured by screwing or otherwise straining the deck-timbers, but fits alike, however the windlass is raised or depress-

Fig. 1.

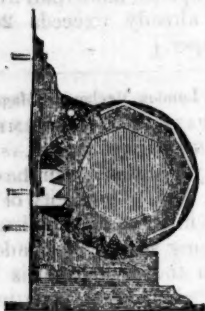


Fig. 2.

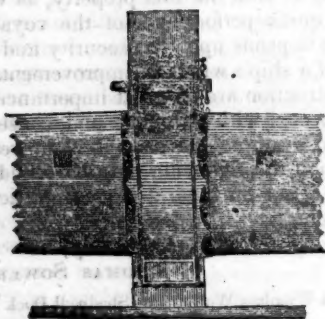
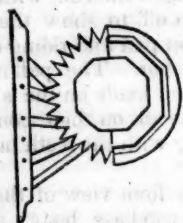


Fig. 3.



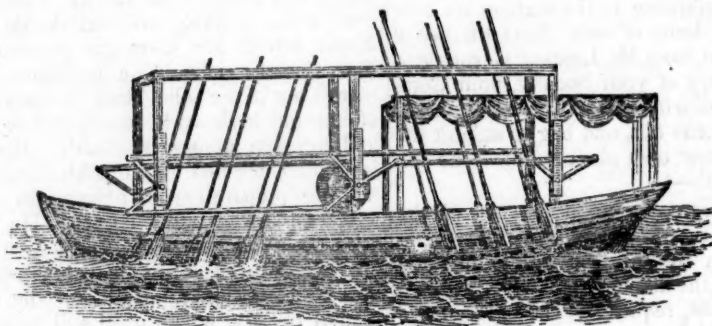
ed; on which account it has proved particularly valuable to ships carrying wool, hemp, and other screwed cargoes, from many of which the common palls had been taken out. If the cable ride, or a hand-spike foul, the windlass may be immediately run backward by lifting the pall. It is always in full pall, and to meet a sea, or for riding or veering the cable, it may be instantly converted into an efficient riding-chock by inserting the lock-bolt, which effectually prevents the windlass from being moved either way.

Of the Riding-Chock.

For riding, the pall being locked, the rid-

ing-chock is raised by a lever, and the wood-wedge driven in until the chock is firmly geared with the teeth on the cylinder. By this simple and quick operation, the windless becomes a complete fixture with the pall-bit and deck, which cannot be removed whilst they remain fast, as it is secured alike in every direction, being literally embedded in iron. It is so readily applied, that the windlass may be chocked or unchocked instantaneously, and at any time, as the pall and chock fit alike to every part of the cylinder. It does not strain the windlass from the pall-bits, like the common wood riding-chocks, but supports it to the pall. It occupies less space, and allows the windlass to be made shorter, if required.

The whole apparatus can be applied to any ship windlass, and at a less expense than the common palls and the wood riding-chocks. It is more easily fitted, and not liable to get out of repair; and is peculiarly adapted to the use of chain cables. It has already been adopted on board of vessels from 30 to 960 tons register, including East and West Indiamen, English and foreign traders, steam-packets, cutters, &c.; and the reports of the many intelligent and experienced commanders who have it in use, and who have put it to the most severe and complete trial, are at once gratifying and conclusive as to the many great and important advantages it possesses. In short, all agree in allowing it to combine compactness, cheapness and security.



We are indebted to N. SARGEANT, Esq., Editor of the Philadelphia "Herald," for the following cut and description of the "first steamboat." It opens anew the question as to whom belongs the credit of first applying, or attempting to apply, steam to navigation.

THE FIRST STEAMBOAT.—The honor of having originated the application of steam power to propelling vessels has been so generally awarded to FULTON, that any attempt at this day to transfer his laurels to another may seem equally unseasonable and hopeless. Yet it is a fact known to many of our citizens, that twenty years before the great experiment of Fulton and Livingston on the Hudson, a steamboat had been constructed in this city, under the sole direction of a then obscure and still almost unknown individual. This individual was JOHN FITCH, by trade a watchmaker, who, in the year 1785, conceived the project of making a vessel to be propelled by the force of condensed vapor. When the idea occurred to him, as he himself tells us, he did not know there was such a thing as a steam engine in existence; and his having entertained so vast a scheme, as that of constructing a steamboat, seemed to him afterward so extraordinary, that he attributed it to insanity. At all events, the eagerness and perseverance with which he pursued the idea thus presented, evince no ordinary degree of enthusiasm. Being utterly unequal to embarking in the enterprise on his own resources, he, through one of his friends, made application to Congress for aid, stating as an inducement to the furtherance of the plan by that body, the great increase of value which would be given to the lands at the west by this improved method of river navigation. The subject attracted much attention—many persons of high standing in Congress

thought favorably of it—a committee was appointed to examine the papers and report—and there the matter was allowed to drop. Foiled in this attempt, he applied for assistance to individuals; but at first, with no better success. Those who had intelligence to comprehend and means to aid his scheme, were cautious of embarking in a new enterprise which it was evident must involve heavy expense, and the result of which appeared so uncertain. In 1786 he communicated his ideas to Voight, an ingenious mechanic, who cordially approved his plan, and promised every assistance. Between June and August of this year he constructed a model, which worked to his entire satisfaction. By unwearied exertion he at length succeeded in interesting about twenty persons in his plan, and inducing them to take shares of 50 dollars each. Even this was paid very reluctantly, and he found himself obliged to make application to the State Legislature for further aid. A letter which he wrote on this subject to Gen. Mifflin, shows how sanguine were his anticipations of the results he should obtain. He reckons confidently on a speed of seven or eight miles an hour, and on being able to navigate the sea as well as rivers with his new invention. His application however failed, and he found himself greatly embarrassed by want of the requisite funds, at the same time that he was regarded by the company as pledged to persevere in his enterprise. The works were commenced in May, 1787, and completed during the summer. It was found, however, in addition to failures in smaller parts, that the power of the engine was inadequate to propel the boat, and that it was necessary to construct a larger cylinder. A second application was made to Congress for aid, but failed. The cylinder, when made, proved imperfect, and it was concluded to try the old one in a boat of smaller size. In 1788, the boat made a trip from

Philadelphia to Burlington; but on her arrival there, when success seemed to have crowned his exertions, the boiler sprung a leak, and became useless. The boat was towed back, repaired, and again commenced running. In October, a passage was made to Burlington in three hours and ten minutes, and others at nearly the same rate. Still, on the whole nothing was gained on the rate of land travel, and in this respect the result was a failure. In June, 1789, a larger cylinder was tried, but still without much improvement in speed. In disgust, Fitch abandoned the management of the concern, and threw the responsibility upon Voight, retaining only the place of assistant and adviser. In 1790 the boat was again altered, and the 12th of April another trial was made. She performed well, and the business of the summer was tolerably prosperous. In the mean while, Fitch was principally engrossed in legal proceedings for the securing of a patent. His claims were contested by Rumsey, who maintained that to himself belonged the honor of priority in applying steam to the propelling of boats. What were the real merits of Rumsey, we shall not undertake to determine. A boat constructed on his plan was tried in London, and failed. Fitch gained his patent, but it was never attended with any pecuniary advantage. The company continued together another year; but with so little profit, that in April, 1791, a meeting was held, and a proposal made to abandon the enterprise. Others, still sanguine, were in favor of another trial, with a new boat, and improved machinery. This project, however, was not executed. The last struggles of the PERSEVERANCE terminated in the year just named, and she was consigned to a neglected old age in Kensington docks. Fitch died, under great pecuniary embarrassment, in 1793. He had filled several small MS. books with personal and general narrative more or less connected with his great scheme, which he bequeathed to the Philadelphia Library, with the proviso that they were to remain closed for thirty years. He seems to have been determined that one generation should pass before he again submitted his reputation to the tribunal of human opinion. The books, which were opened in due time, contain a minute account of his perplexities and disappointments, written in a manner which shows that these had not left his temper unruffled, or inspired him with very kindly feelings towards mankind. There are interspersed in the narratives many shrewd remarks, and even humorous sallies, but their general tone is desponding and querulous. His mind, naturally strong and original, seems to have received from the circumstances in which he was placed an unhappy bias; and the tone of expression in which he appears to have indulged, must of itself have been an obstacle to his success. Of the boldness of his conception, and the perseverance with which he followed it up, there can be but one opinion; and had fortune seconded his efforts, and his means been equal to the accomplishment of his designs, there can be no doubt that he would now hold undisputed the honor of having given to the country this most noble and useful invention.

The above wood cut conveys a correct idea of Fitch's boat, as originally planned; but in the one actually constructed, he so far modified this plan as to place the paddles of the boat astern.

A dreadful accident occurred on the Philadelphia and Reading Railroad, on the 13th inst, three miles

below Reading. In blowing rocks, a fragment, weighing 300 lbs., fell on a shanty, crushing in its course to the ground floor, the wife and child of Mr. Jno. Boyle, blacksmith, employed by Mr. Anderson, the contractor. The death was instantaneous and the bodies were horribly mangled.—[Mercantile.]

DEFENCE OF THE PURITANS

Extracted from a notice of the fourth volume of "Sparks' American Biography," in the North American Review, for January:—

The time cannot be distant, when that whole chapter of English history, the age of the puritans will be written with new perceptions of its connexion with the great cause of free government, of liberty of conscience, and political reform. Nothing can be narrower, less generous, less philosophical, than the tone, in which those lofty spirits have been alternately assailed and defended. The English of the present day, who owe it to the Puritans that they are not tossed, like a shuttlecock, from the pikes of an enraged populace to the bayonets of a military police, as their neighbors in France, hurry over the history of the commonwealth with a kind of compassionate or supercilious nonchalance; and even we, we, to our shame be it said, we, descendants of that noble stock, we, sprung from the best blood of that high-souled race, we are eternally tasking our wits to find apologies and excuses for our fathers. Apologies for the asserters of the liberty of conscience; excuses for the men that invented representative government; and broke the iron yoke of feudalism! Exquisite degeneracy; dainty unworthiness of our origin! What, could Burke himself, loyal to the core,—with the streaming horrors of the French revolution before his eyes, and wrought by them to a political, and almost to a physical phrenzy, could even he say of the leaders of the great English rebellion, "whilst they attempted or affected changes in the commonwealth, they sanctified their ambition, by advancing the dignity of the people whose peace they troubled. They had long views. They were men of great civil and military talents, and if the terror, the ornament of their age. The compliment made to one of the great bad men of the old stamp, (Cromwell), by his kinsman, a favorite poet of that time, shows what it was he proposed, and what indeed to a great degree he accomplished, in the success of his ambition:

"Still as you rise, the State, exalted too,
Finds no distemper, while, 'tis changed by you;
Changed like the world's great scene, when without noise,
The rising sun night's vulgar light destroys."

These disturbers were not so much like men usurping power, as asserting their natural place in society. Their rising was to illuminate and beautify the world. Their conquest over their competitors was by outshining them. The hand, that, like a destroying angel, smote the country, communicated to it the force and energy under which it suffered! Abstract from this splendid eulogium, the qualifications manifestly attached to the praise, to the end that the praise might be forgiven by himself, and his age, and what a tribute remains!—Cromwell and the men with whom and by whom he subverted the British monarchy, sanctifying their ambition by promoting the dignity of the State, men of great civil as well as great military talent, the ornament of their age; proposing as they rose to elevate their country with them, and to a great degree effecting what they proposed; not so much the usurpers of the places of other men, as asserters of their own; illuminating and beautifying the world, as the rising sun illuminates and adorns the heavens; outshining not trampling down their competitors;—and if they smote their country like a destroying angel, imparting to it at the same time, the force and energy of the destroyer, to smite down and blast its enemies! And shall this be said of Cromwell and his peers,—this by Burke;—this at the height of the panic of the French Revolution; this in a discourse intended as a warning cry, a *vox clamantis*, to rouse England and Europe into a crusade against revolutionary France! And shall we, the citizens of a free republic, founded by the long suffering puritans, the inhabitants of a mighty continent, by their nerve and counsel added to the civilized world; shall we who live in an age when even the heaven defying horrors of that French revolution begin to be partly forgotten, in the brilliant development of power and talent which it occasioned; begin to be in some measure excused, for the ages of crying oppression which preceded

it; begin to be in no small degree atoned for, by the civil regeneration of feudal Europe to which it gave the impulse; shall we, while the whole civilized world, struggling on triumphant, with joyous strides or convulsive starts, is shaping its institutions of civil polity more and more upon the principles first practically set forth and exemplified by our puritan fathers;—shall we, being what we are, and whence we are, and where we are, shall we basely qualify the homage due to these illustrious shades? the men who were faithful when Cromwell and his associates were faithless? Miserable prudery! Why do we not boldly and roundly, without strain or qualification, vindicate their fame, defend their characters, and assert that their very faults were the instruments, with which Providence vouchsafed to accomplish this great work? "They were dark and austere;" they needed to be; the children of sunshine would have drooped and fainted under the terrors and gloom of the enterprise. "They persecuted those who differed from them." They had a right to do that, which is falsely called persecuting those who differed from them. The man, who possesses the power at home, and persecutes his brother who differs from him; the man who at home will not let his neighbour live in peace and die in his bed, because he differs from him, is a tyrant. But the victims of persecution, the men who have given up native land, and home, and forefathers' graves to those who will not tolerate their difference, and crossed the awful deep, and found out a place of refuge in the horrid wilderness, where hardships and danger are their constant attendance, those men have a right to their own way, in their own desert. They have a right to be undisturbed by sights and sounds and doings and sayings, which shock their sense of religious decency. No wandering, melancholic, or fanatic opinionist has a right to invade their place of voluntary exile, and claim the toleration and protection of the banished society, for his own annoying peculiarity. The utmost he can demand is a right to do what they have done, quit them in peace, and seek a wilderness still more remote, where he, in his turn, may claim a right to worship God according to his own peculiarity. "But the puritans were cruel, and hung persons charged with witchcraft;" and what should we do? If we honestly believed, as they honestly believed, that the wretched victims of these delusions, were in personal league with the enemy of man; if we saw the incarnate principle of Evil where they saw it; if the state of philosophy, of public sentiment, of popular theology, was to us what it was to them, and we believed ourselves to be fighting a perilous battle, amidst the flashing fires of the opening pit; are we quite sure, that we should go into the ghastly contest, with soft and elegant phrases on our lips, and mild and placid affections in our bosoms? No, no. Let it suffice us to be ourselves tolerant and merciful. Let us be content with our own liberality; our own abhorrence of persecution, which in us would be our crime; but let us not judge great and honorable names of other days, by a standard either of opinion or duty, which does not apply to their age, their circumstances, or their vocation. Do not let us quarrel with the noble and massy edifice, because it was the work of successive generations; because it did not rise like an exhalation from the soil; because they who laid the foundation did not carry up the head stone. Let us not murmur at the oak, because it did not shoot up from the acorn like a mushroom, in a single night. Let us not impeach the wisdom of our forefathers for not bringing to perfection in a day, the system of social institutions, which required for its perfection that it should not be the work of a day; which required precisely, more than every thing else, the operation of successive years, the seasoning of long time, the discipline of experience, the rectification of errors by their results, the preparation for one stage of advancement in the training of a former stage, the enthusiasm caught from prophetic glimpses of a gradually unfolding future.

We are informed that Major General Scott, accompanied by several subaltern Officers of the Army, will leave Washington this morning, or to-morrow, for the south to join the U. S. troops in Florida.—[Naval and Military Chronicle.]

First Lieutenant R. P. Parrott, of the 3d Artillery, has been nominated to the Senate as Captain of Ordnance, to supply the vacancy occasioned by the death of Captain R. Bache.—[Naval and Military Chronicle.]

A CARD.

TO THE SUBSCRIBERS AND FRIENDS OF THE
**RAILROAD JOURNAL, MECHANICS' MAGAZINE, NEW-YORK
 FARMER, AND APPRENTICE'S COMPANION;**

All of which publications have been delayed *nearly a month*, in consequence of the destruction by the late conflagration of the press and materials with which they were printed. The Editor and Proprietor desires to say, that they will all be again regularly issued in a few days, and forwarded with care and punctuality.

In consequence of the heavy loss sustained by the fire, including not only nearly all my *printing materials*, but also *nearly all my stock of back volumes, sheets, and numbers* of the different publications, and all of my *stereotype plates* of five volumes of the Mechanics' Magazine, I am compelled to ask the indulgence of their patrons for a few days, until I can get a new office arranged, so as to present the works to them improved both in *appearance* and in *matter*—and as I have relinquished the management of the business department of the New-York American, for the purpose of devoting myself exclusively, hereafter, to my publications, I hope to render them more interesting and more useful than I have heretofore been able.

I am also induced by my losses, which amount to over eight thousand dollars, to request each friend of my publications to aid in *extending their circulation*, and of each present subscriber the favor to remit the balance due, if any there be, and in advance for the year EIGHTEEN HUNDRED AND THIRTY-SIX, that I may be able to make the works worthy of increased patronage, and useful to community.

D. K. MINOR, EDITOR AND PROPRIETOR.

New-York, January 15, 1836.

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